DOCUMENT RESUME

ED 169 586 CS 502 477

TITLE Issues in Communication. No. 2.
INSTITUTION International Inst. of Communications, London (England).
PUB DATE 78
NOTE 59p.; Some pages have small and light type and may not reproduce well
AVAILABLE FROM Publication Coordinator, International Institute of Communication, Tavistock House East, Tavistock Square, London, WC1H 9LG England

EDRS PRICE MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS *Communications; *Communication Satellites; Community; Data Processing; Developing Nations; *Foreign Countries; Information Processing; International Law; *Telecommunication; *Television
IDENTIFIERS *International Communication

ABSTRACT

This book, the second of a series published annually by the International Institute of Communications (IIC), is based on the papers and discussions of the IIC's Annual Conference and provides a survey of major issues in communication. The five subject headings are: Global Communications: Orders and Patterns, Space Communications, Information and Law, Communications and Community, and The Right to Communicate. Specific topics discussed are: a new international communication order; a global communications order; patterns of information flows; interaction and freedom; the International Television Flows Project; the future of United States space communications; the legal regulation of information and data processing; the Nordic satellite project and international law; communication in rural communities in developing countries; modernization, communication, and community development; the role of telecommunications in socioeconomic development; and how to achieve the right to communicate. (TJ)

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Issues in Communication

No.2 1978

International Institute of Communications

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The International Institute of Communications provides a forum for the discussion of communication policies and issues. It is concerned with the cultural, social, economic, political and legal aspects of communications, both now and in the future. Its work is global and multidisciplinary and involves politicians and policy-makers, executives, broadcasters, journalists, industrialists, engineers, lawyers and academics. It holds seminars and conferences, organises international and national research projects and has a library and publications programme. Its journal *InterMedia* provides news and comment on communications issues around the world.

This book, *Issues in Communications,* is the second of a series published annually by the IIC. Each volume is based on the papers and discussions of the IIC's Annual Conference and provides a survey of major issues in communication. Many of the topics are of continuing interest to the IIC, and are being dealt with concurrently in other IIC meetings, projects and publications.

This volume follows the IIC's 1978 Annual Conference in Dubrovnik, Yugoslavia.

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ISBN: 0 904776 07 7
Published by the International Institute of Communications, Tavistock House East, Tavistock Square, London WC1.
Printed by Tradsgreat Ltd, 284 London Road, Wallington, Surrey.

1. Global Communications; Orders and Patterns

The global pattern of communication is now one of the central issues in world politics. The discussions at UNESCO, in the Third World, in the USA and elsewhere confirm that information and the flows of information are now seen as crucial factors in the international community.

The question of a global communication order was therefore selected by the IIC as the major topic of its 1978 Annual Conference. What are the global systems of communication, and how do they operate? To what extent do they constitute a 'Global Communications Order'? And what are the relationships to regional and national communications 'orders'?

At Dubrovnik, Leonard Marks, Secretary, World Press Freedom Committee; Mahmoud El Sherif, Editor, *Ad-Dustour;* Tomo Martelanc, University of Ljubljana; and Franko Winter, Director General, Radio Television Zagreb, spoke from different viewpoints on the demands for a new international order of information. They agreed on many points – on the urgency of action, on the need for diversity – but often differed on their emphases and priorities. At one session, Sean MacBride, President of UNESCO's Commission on Communications, discussed the commission's work and priorities, and the reasons why the commission was taking an overall approach.

A fundamental issue in these discussions is the exact extent, the quantity, the direction, of the flow of information around the world. For some years the IIC has been involved in a massive investigation of television flows. Its International Television Flows Project is described here by Peter Gould, director of the project.

REFLECTIONS ON A NEW INTERNATIONAL COMMUNICATION ORDER

Mahmoud El-Sherif

I had the privilege in May 1978 of participating in a meeting of communication experts held in Stockholm, Sweden, under the auspices of UNESCO. We discussed some of the major issues implied in the new concept of 'the right to communicate'. Our aim was to define and clarify this concept as a preliminary step towards incorporating it as a separate element in the universal declaration of human rights.

At one point we found ourselves engaged in debating the international dimension of the right to communicate. It was here that the participants from developing countries raised the questions of 'imbalance' in the flow of information, and what they termed as an attempt, by the industrial countries, to culturally dominate the developing world.

With a view of rectifying this situation and creating a more just and balanced communication relationship, on both the national and the international levels, many of us thought that the time had come for the creation of a completely new 'international communication order' This scheme would respond to the growing needs of mankind, and meet with the tremendous changes that have taken place in the last few decades.

But although many participants did agree on the necessity of this new order, we could not reach unanimity on how it should be brought into existence. Some of us thought that such a task was beyond the responsibility of communications scientists and planners and that, because it is bound to infringe on the sovereignty of states, it has to be delegated to experts in international law. A few people even questioned the validity of the whole concept. They said that we do not have an international communication order (in the legal sense) at the moment and that we cannot hope to succeed in building a new one from nothing.

All these debates on a new order, although they have not yet reached a conclusive result, point to one significant and important fact. And that is the feeling shared by communicators everywhere that the present situation suffers from many defects and injustices; that changing times require changes in communication policies and techniques; and that if we are to establish peace in the world, and increase understanding amongst nations, we have to pool all our energies and technical and human resources. We have to make communication not a privilege enjoyed by the rich and powerful few, but a fundamental right practised by the poor and the inarticulate many.

I am sure all of you realise that such an objective is a formidable one. A new global order, by its very nature, is a complex and many faceted thing. I will therefore confine my remarks to two specific

areas. I will talk, first, about the proposed new order as it relates to some of the problems of communication in the developing countries. Then I will talk about the new order as it relates to communication between the industrial and the developing countries.

A new communication order must develop and encourage two fundamental concepts in Third World countries. Interactive communication between people must replace the one-way, sender-receiver relationship that is characteristic of the process of information as it exists today. Secondly, there is the concept that freedom of communication is a basic human right, which must be respected and which is vested in all citizens regardless of their ethnic, linguistic, political, or religious affiliations.

I realise, of course, that human rights have been the subject of fierce controversy in many quarters, especially as they relate to developing countries. To give just one example: President Marcos of the Philippines said in a recent conference of the International Law Association held in Manila that 'Human rights should not be interpreted so narrowly that the issue is restricted only to political and civil freedoms'.

I am sure some nations in the developing world and elsewhere will readily agree with such an interpretation of the Bill of Human Rights. But I must admit that I see no point at all in talking about a new communications order, as it applies to the developing countries, unless the order guarantees the participation of as many people as possible in the communication processes, thus allowing the maximum number of citizens the opportunity to express themselves, to air their views, and to take an active role in the shaping of their own destinies.

Such an order is, therefore, organically linked with the standard of democracy that a country has established. As Professor Harms of the University of Hawaii has put it: 'A new international communication order has to encourage a worldwide discussion of the people, by the people and for the people'. If we accept these premises as valid, we also have to accept the principle of making the means of communication themselves accessible to the public. Without this, the systems will remain the monopoly of governments or the elite of publishers and broadcasters. The 'Big Brother' relationship will persist, and defeat the aims that such an order should try to achieve.

But even if the principles of accessibility and active participation are accepted, most developing countries will face many difficulties in trying to provide communication facilities to their citizens, especially in the remote rural areas. Some states in Africa have succeeded in establishing community newspapers in tribal languages in remote regions. Others have established low-powered local radio stations. But these experiments could not have materialised without the help of some developed countries and international organisations.

In order to develop and increase the mass communication resources which are available in Third World countries, massive financial help and technical assistance are needed from the industrial countries. If the new international order can help create a world body or a global fund to finance and channel such forms of assistance to the developing countries, then a great step would have been taken towards the popularisation of the use of mass media in the Third World. But even if they have the means of communication, the rural population will still be unable to reap the maximum benefit. Problems of poverty and illiteracy, the diversity of local dialects and languages, and the lack of transportation facilities, need also to be solved or at least mitigated.

There are no magical or quick solutions to these chronic problems. One can only hope that with the growing awareness of the industrial countries of their obligation to help in boosting the social and economic reconstruction of the Third World, and with the increasing tendency of the countries of the Third World to cooperate more fully amongst themselves, these problems may gradually be solved, and more and more people able to enjoy the privileges of communication. Therefore, a new international communication order will have not only to encourage these trends but to support them in the most vigorous and dedicated manner.

Some of us may ask, however, how an international communication order can help establish such new concepts as the freedom of communication, participation, and accessibility to the media, in those countries where traditions of absolute rule, prejudice and racial discrimination make talk about democracy and civil liberties an exercise in utopian dreams? How can such principles, such an order, find their roots in these countries without inviting angry protests that they constitute an interference in the countries' internal affairs, and an infringement of their sovereignty? I am sure no one has satisfying answers to these questions.

For one of the dilemmas of our times is how to reach a compromise between the respect of states' sovereignty and the guarantee of their citizens' basic human rights. A new order cannot sanction punishments on those who choose to ignore or violate the principles it advocates. But, one assumes,

it does have various tools of persuasion and gentle pressure. And if its principles acquire worldwide recognition, as one hopes they will, such principles would – in time – assume so powerful a momentum and moral force of their own that countries would find it to their own benefit to accept them and comply with them.

As we move to the international area, where the new order is expected to play an even greater role, we are faced instantly with the basic problem which characterises the existing relationship between the industrial and the developing countries; and that is the problem of the imbalance in the flow of news and information. The issue is admittedly complex and controversial. The developing countries accuse the international news agencies, and the Western media in general, of reporting only the catastrophes and political upheavals of the Third World, and ignoring their tremendous economic and social changes and achievements.

The Western media return the fire by accusing Third World countries – or most of them – of imposing restrictions on the freedom of gathering and disseminating news. They say Third World countries want to use the Western media to publish only news that has been approved. In defence of their preference for sensational news of the developing world, Western communicators invariably find a good excuse in the demands of the market and the tyranny of the tastes of their audiences.

When one scrutinises the arguments of both sides one probably finds a grain of truth in both. Therefore, a new international communications order, to be fair and meaningful, has to take into consideration the valid arguments of both sides. It will have to cultivate in the developing countries an open-door policy towards news; it will have to struggle to lift all forms of censorship, and to guarantee the freedom of the mass media. It will also have to find the ways and means, and create the systems and lay down the principles, by which more news about the developmental processes of Third World countries are projected in the media of the industrial world.

For those who question the validity of the Third World countries' argument about imbalance in the flow of news from their part of the world, I will refer to a UNESCO study which estimated the input of Third World news into the world total circulation to be 15% while world news emanating from Paris, London, and New York was 90%. I realise, of course, that it may be unscientific to judge the situation merely on the basis of these figures; but they support, nonetheless, the basic fact of imbalance which a new order will be expected to correct.

As for the excuse that reporters, editors, and broadcasters are captives of the tastes of their markets; this is true, but only to a certain extent. In my opinion an honest professional communicator has a social responsibility to his profession and the world. It is his obligation to balance his duty to satisfy the tastes of his audience with his duty to satisfy their needs; to educate them; and to enlighten them about the complexities of the world. A new communication order will be required to emphasise and enrich faith in these responsibilities in their manifold dimensions, so that none of them is sacrificed for the others.

Another related problem which has been the cause of complaint in the developing countries, is the bias which colours the reporting of news from the Third World. In many cases, events are portrayed in an East-West, Cold War, context. In some cases, events are judged by Western cultural yardsticks, on the assumption that what is good for England or the USA or the USSR is automatically good in Jordan, Tanzania, or Honduras.

The time has come for all for us to acknowledge that we are living a world of diversity; a multi-cultural, multi-religious, multi-social world. No nation can re-create the world in its own image. We have to approach other peoples and their cultures and traditions with tolerance, humility open-mindedness, and the willingness to learn. A new international order will have to address itself to these erroneous attitudes in the communication professions. It will have to do so probably through the formulation of an international code of ethics which would be binding to all, and which might put an end to prejudiced and slanted reporting of all sorts.

We should have no illusions, however, that we have a long way to go before a new international communication order can begin to take shape. The complexity of the task is compounded by the divergence of opinions. But we should never be discouraged. The alternative to failure is more chaos in international relations, and more bitterness and frustration in the developing world. It is essential that the debate for the creation of a new order should continue, and the hope for richer and more equitable communication between nations should persists. If we want to avert the ugly consequences of passivity, this is the only course of action we have.

A GLOBAL COMMUNICATIONS ORDER

Leonard Marks

There has been introduced into the lexicon of communicators during the past year a new phrase – 'a new world information order'. This phrase has been advanced by those in the Third World, non-aligned, countries who emphasise that such a new world information order is an essential corollary of a new international economic order.

In my opinion their claims are not rhetoric. They are talking about one of the essential issues which the world faces today. They have very legitimate aspirations to share in the world's economic good and in the prosperity which developed countries have enjoyed.

The demand for a new order requires media to 'take a more objective approach towards the aspirations and concerns of the developing people' and 'the avoidance of all incitement to hatred and to any discrimination of racial, political and all other kinds'. Also to be avoided are all 'initiatives liable to misrepresent, defame or show in an unfavourable light the activities of the developing countries'.

As a 'new' approach, this proposal may have an attraction for those who wish to achieve 'order' in international life. But on examination it appears that the plan is not new, nor is it likely to introduce order. A recent appeal for the approach was made to UNESCO in July 1978 by Mustaphi Masmoudi, the Tunisian Secretary of State for Information. He submitted an elaborate exposition in which he repeated the charge that the Western media depicted the rest of the world in 'the most unfavourable light, stressing crises, strikes, street demonstrations, putsches, etc., even holding them up to ridicule'. This attack on the Western media illustrates the basic differences between the role of the press in a totalitarian country and in a democratic one.

It is my feeling that the world today is deeply divided between two conflicting ideologies – economically and politically. It is a difference in approach and I am not confident that the differences are reconciliable. It is my view that we must learn to live with the two different societies in an interdependent world and to make adjustments so that we can progress along the road to peace.

At the outset, it is essential to distinguish between 'news' as it is understood in Western society, and how it is seen in a controlled society. Basically, in the West, news is the statement or report of an event which commands the attention of society. In a totalitarian country, 'news' is any statement or reported event which can be used to advance state objectives. Negative information is ignored and controversy seldom aired.

Let me illustrate. Soviet journalists do not consider disasters, crimes, accidents, or a story critical of the regime to be worthy of their attention. The crash of a Soviet aircraft is not news; little attention is paid to harvest failures, floods, earthquakes or similar disasters. In 1976 when TASS reported that Soyuz 23 had been recalled because of a malfunction Soviet watchers thought that Soviet policy might have changed. But that single report did not set a pattern. When Martina Navratilova won the world tennis championship at Wimbledon, it was a front-page story throughout the free world; but in her native Czechoslovakia no mention was made in the news pages or on the television screens.

By comparison the Western press, radio and television feature the failures of government officials and do not hesitate to criticize the government's policy. Disaster and crisis stories are prominent. When planes land safely, there is no story. When one crashes, there is a headline. When harvests fall short of expectations, the public is informed and the reasons for the crop failures examined to determine if negligence, poor planning, or human error was involved. By reporting failure, corruption and weakness, the press fulfills a vital function. But constructive achievements are also reported and proper recognition given to those who have contributed to the welfare of society, nationally and internationally.

In a controlled society, the press is a tool of government and the journalist a servant of the state. In a democratic society, a journalist is independent of government, and is a critic, not a servant. Under the Soviet system, the communist party's propaganda apparatus 'creates public opinion'. In a free society the citizen is free to form a judgment on the merits of an issue. Dissent is not only tolerated but encouraged.

Time does not permit a point-by-point examination of the Third World brief against the Western news-gathering agencies. But the attack rests on the notion that they fail to present an objective view of what is happening, ignore constructive achievements and convey to the world a distorted picture of the aspirations of developing nations. In the process, personal attacks are made against the integrity of foreign correspondents, accusing them of gathering news at the bar of the leading air-conditioned hotel, seeking the views of the bar-tender or fellow journalists. In self-defence, Third World spokesmen

assert that they must control news reports so that 'the truth will be made available to the rest of the world'.

Translating this rhetoric into action, Tanzania and Nigeria recently adopted laws that give their national news agencies the exclusive right to gather and disseminate news within their borders for either domestic or international use. In announcing this policy, a Nigerian spokesman at a recent meeting in Cairo pointed out that foreign correspondents would probably be barred, and that in the future the rest of the world would learn about events only through government press releases, radio tapes and film.

Stung by the criticism, the spokesmen for US media patiently refute the 'bad news only' scenario by producing clippings from leading papers and detailed analyses of wire-service reports and radio and television programmes. They also stress the obvious: 'news' by definition is the calamity or untoward event.

The slur against the integrity of the foreign correspondent can only be dismissed as pique. Of course, there have been inaccurate and biased stories, but they are the exception. In some cases, the distortion happens because a correspondent is unable to interview a knowledgeable official or to have access to the 'other side'. When Third World government officials complain that their constructive achievements are ignored, they must realise that what is happening in their societies competes for space and air time with events of global importance in Moscow, Cairo and Washington.

These contrasting views illustrate the basic and, at this point, irreconciliable differences between the advocates of a free press and those who censor. Each nation must decide which philosophy it will follow. But it is significant that political leaders be reminded of the provisions of Article 19 of the UN Declaration of Human Rights (adopted in 1948 without major dissent) which provides: 'Everyone has the right to freedom of opinion and expression; this right includes the freedom to hold opinions without interference and to seek, receive and impart any information and ideas through any media and regardless of frontiers'.

In the same spirit, in 1975 at Helsinki, 35 nations proclaimed the right of journalists to gather news without restraint. Although those provisions are clearly spelled out in Helsinki's much-discussed Basket III, dissidents in the Soviet Union, the Charter 77 group in Czechoslovakia and similar groups throughout Eastern Europe have been jailed as 'hooligans' for asserting their rights and speaking out to the Western press.

However, arguments for the free-flow-of-information principle have fallen on deaf ears. For instance, Idi Amin, like other dictators, determines which journalists, if any, are permitted to enter his country, where they will go, whom they may interview, and what reports may be sent out of the country. As a result, little information will emerge. Until there is a dramatic event like the Israeli raid on the airport at Entebbe, countries like this will seldom be heard from. And then the reports will be second-hand.

The Third World has a big stake in improving its image in the Western world. Bank loans, business investments and tourism are among the benefits that can accrue. Censoring the news by denying access to the free press is clearly self-defeating. American reporters will not accept at face value the press releases from Washington, state capitals or the largest American institutions. Why then should they be willing to do so with Kampala or other capitals?

The philosophic conflicts between East and West are not superficial. They are deep-seated, arising out of the differences between a free enterprise society and one controlled by the State. In the West, people have a right to know; in the East, they know only what the State wants them to know. No declaration adopted by an international organisation, or resolution approved by a majority, will change the attitude of either side. Considering this question, it is well for developing nations – newcomers at the international table – to remember that this issue was debated in 1948 when the UN Declaration of Human Rights proclaimed the importance of the free flow of information. Since then, the world has become more interdependent and the need for an exchange of ideas and information is even greater. But, if the New World Information Order is predicated on suppressing the flow rather than encouraging it, there is little hope for solving the complex issues that the world faces in a struggle for survival.

In concluding these remarks I want to offer some suggestions for positive actions. I support the Third World spokesmen who plead for better communication and need for more news about their achievements; and when there is legitimate news of a positive nature, it should be reported by the Western media.

Diversity in news sources helps understanding, and therefore there should be more rather than fewer national news agencies.

When developing nations attempt to tell their stories to those who can offer business credits and technical assistance, they should have that opportunity.

When infant nations strive to maintain their ancient cultures, that effort must be understood. International culture should not be homogeneous but should thrive on diversity. Accordingly, there should be an exchange of cultural information – instead of a one-way flow.

These comments are only rhetoric unless affirmative actions are taken. How can this be done?

I had the privilege of serving in 1969 as the first chairman of the International Conference on Communication Satellites which created the Intelsat System. Today this system has 102 member countries. When I convened the opening session, I expressed the hope that this exciting new technological invention might lead to a better understanding between peoples everywhere. My dream has fallen short of realisation but I have not abandoned hope.

Specifically, I envisioned rates which would stimulate greater exchange of information, but that has not happened. Although international communication rates have been reduced, the enormous cost savings of satellites have not been passed on to the consumer. The profits of PTT's and communication companies have risen dramatically as satellites replaced trans-oceanic cables.

The time has come for a 'people's dividend' to developing nations. I propose drastically reduced rates for press, radio and television between developing countries and from them to the rest of the world. Facilities are available, and there is no shortage of circuits or of competent technicians. The time has come to give the developing nations an opportunity of presenting their views to the world without the financial burden of rates which few can bear.

I hope that important international organisations such as the International Institute of Communications will support this effort before the International Telecommunication Union, UNESCO, and in parliaments of developed countries. I pledge my support in the United States and will enlist the help of many who earnestly seek better relations with the Third World.

Finally, I urge the developed world to pool its resources and launch a communication satellite for the benefit of developing nations. Several years ago, the United States co-operated with India on such a venture which proved to be enormously successful in creating a better flow of information to millions who could not be reached by traditional communications techniques. The developed world should provide the funds and the technical resources – the developing nations should have complete control over the programme content. These suggestions are only two of the many that can result from a constructive dialogue on the New World Information Order. I hope that the discussion will be channeled in this direction.

PATTERNS OF INFORMATION FLOW

Tomo Martelanc

When speaking on information flow, one cannot avoid the notion of the 'free flow of information'. A front page comment in *InterMedia* once described the 'free flow of information' as 'one of the most notorious phrases in current use.' The writer added that 'the expression is used indiscriminately to cover some extremely disparate phenomena . . . As a label, it is used to introduce a surreal jumble of ideas' (April 1978, Vol 6 No 2).

A few years ago such words would have sounded a heresy against the governing dogma. The tenet of the free flow of information has long been an official credo of UNESCO, and the basis of many international documents and records. The true nature of the slogan was never really disguised, though many of those who were using words casually might not have been aware of its historical background, ideological implication and political content.

Even today, it is not generally known that 'free flow' is a rather recent notion; it dates back only to a few years before World War II. What is even less familiar is the fact that the slogan was launched by the USA against the British monopoly of the information market of that time. When the Cold War began, the West adopted the idea as one of its very efficient political and ideological weapons against the USSR and the Eastern European countries. Indeed, the principle of free flow has often been used

for definite political purposes, and is still one of the West's main ideological instruments in their relationship with the Eastern block; as could be seen at the Conferences on European Security and Co-operation in Helsinki and Belgrade and at the General Conferences of UNESCO.

At present, especially in UNESCO, the notion of 'free flow' has lost a lot of its glamour. Many non-aligned and developing countries have pointed out that the idea of 'free flow' is as obsolete as the 'laisser faire' principle in economy, and expressed their concern that the idea 'was being used as an ideological smokescreen to cover the one-way flow of information; that information was in fact a vehicle to bring about cultural and political dependence on the models prevailing in the centre. Free information, in this sense, it was argued, was not different from other mystifying concepts, such as the "free market" or "free enterprise", which signify the freedom of those who are powerful to exploit those who are powerless' *(Development Dialogue, 1976, No 2 p8).*

It had also been argued that the principle of 'free flow' conceals many unpleasant truths about the real patterns of information flow. It may conceal, for instance, the real nature of the one-way flow from the developed to the developing and from big to small countries; the actual monopoly of the news distributors; the tremendous gap in the development of mass media; the fact that abundance and scarcity exist together in communications as in the physical matters. Thus, some strong words have been used against the liberal idea of free flow under the ceilings of UNESCO conference halls – including 'communication neo-colonialism' and 'cultural genocide'.

The main inequalities and the grave imbalances in international communication and the flow of information are flagrant enough; there is no further need to prove them. Nonetheless, some recent studies have examined the patterns of information flow on the international context and their results are worth noting. It has been shown that the five largest world news agencies produce between them four-fifths of the international news that gets printed. However, they devote not more than 20% to 30% of their news items to the developing countries, which account for three quarters of humanity (M. Masmoudi, paper to UNESCO's International Commission for the Study of Communication Problems, July 1978).

It has been found out that under half (in some cases, under 10%) of the TV programmes shown in developing countries are made at home. In contrast, the industrial, developed countries themselves produce the overwhelming majority of their TV programmes. In the USA, the figure is nearly 100% (Nordenstreng, Varis). A Latin American study (Fernando Reyes Matta: 'The Information Bedazzlement of Latin America' in *Development Dialogue*, 1976: 2) has revealed that in the 16 major Latin American newspapers over a certain period 39% of international news came from UPI and 21% from AP. The two American news agencies supplied a total of 60% of all the international news that was published. The figures show some progress, adds the author, since a similar CIESPAL study, made in the 1960s, disclosed a dependence on these two agencies of nearly 80%. The same study found out that the reporting of international events was, under the influence of the transnational news sources, unbalanced to the point of distortion. Overwhelming attention was paid to events in Western Europe and the USA (over 60%) and even Latin America itself was ranked third (with 19.6%) in its own newspapers. Both Asia and Africa were quite neglected (only 7.1% altogether).

Such distortion of the geographical distribution of world events is less surprising once the location of the big news agencies' correspondents in various parts of the world is taken into account. The ratio of those reporting from Europe and North America to those reporting from the rest of the world is roughly 2:1.

It is not only the quantity of the news reporting which is giving serious cause for concern in terms of balance and truthfulness, but also its content and quality. A recent study carried out on a large news agency's reporting and selection of news from its Latin American correspondents shows the bias and one-sidedness of news coverage. It is Al Hester's *The Associated Press and News from Latin America: A Gatekeeper & News Flow Study* (University Microfilm International, London, 1977). First position is given to stories directly involving US interest; second, revolutions and coups; third position is given to natural catastrophes and disasters; fourth to crime or criminal violence; and fifth to domestic government and politics. Latin American development is ranked only 11th, and the arts and entertainment 16th.

All these studies have confirmed the notorious facts of the actual pattern of the present news flow and substantiated claims for the need for a radical transformation in the international communication system. Hence, the demands for a more equal and balanced information flow from Third World countries, which have induced UNESCO to change its doctrine of the 'free flow' into the 'free and balanced flow' and accordingly re-name the division in its secretariat which deals with such matters.

However, is a more balanced flow the single right answer to the burning problems of the communication crisis in the contemporary world? Or, to put the same question the other way around: is the unbalanced

flow of information and distorted reporting the only obstacle to radical new changes in international communications?

It is quite obvious that the problem is much more knotty. One of the roots of the communication crisis in the present world is the unequal distribution of communications facilities in different parts of the world, which reflects to a large extent the disparate distribution of economic wealth. It is quite simple to calculate on the basis of data from UNESCO's *Statistical Yearbook* the differences between the industrialised and the developing countries in communications. The sales of newspapers in developed countries is six times greater than in developing ones; and per number of inhabitants, 10.7 times greater. The number of radio receivers is 4.7 times greater; per capita, 8.45 times greater. With TV sets, the figures are 8.6 and 15.4.The consequences of such a situation are multiple, but they all result in a quest for a new arrangement, a new order, which would offer possibilities for radical improvement and more equitable relations in communication; that is, for a new international communication order.

The heads of non-aligned countries who met at their summit meeting in Colombo in 1976 noted with concern the vast and ever-growing gap between communication capacities in non-aligned countries and the advanced countries. They said it was a legacy of their colonial past. Their political declaration of Colombo stated that: 'This has created a situation of dependence and domination in which the majority of countries are reduced to being passive recipients of biased, inadequate and distorted information. The fuller identification and affirmation of their national and cultural identity thus required them to rectify this serious imbalance and to take urgent steps to provide greater momentum in this new area of mutual co-operation'.

The declaration pointed out some of the possible avenues of further development: 'The emancipation and development of national information media is an integral part of the overall struggle for political, economic and social independence for a large majority of the peoples of the world who should not be denied the right to inform and to be informed objectively and correctly. Self-reliance in sources of information is as important as technological self-reliance since dependence in the field of information in turn retards the very achievement of political and economic growth'.

The contradictions, disparities and inequalities in the contemporary world have become untenable and anachronistic in the modern development of the latter half of the 20th century. Besides the economic imbalance between industrialised and developing countries, there are also vast differences in the levels of education, culture and science as well as of communications. The sphere of communication may not necessarily be the main priority area, but the disparities and inequalities there have a more pronounced, sensitive, distressing and grievous impact than in many other areas. After issues of economic and political relations, communications is becoming the central nerve point where the reactions to the dominating injustice and inequalities are getting ever sharper and more poignant. The more the deprived become aware of the existing injustices, the more they are becoming conscious of the necessity to change the present structures and relationships and establish a new order in communications.

Naturally, the untenable relationships in the global communication system are not only a result of the anachronistic features in the international constellation of communications, but reflect the dominant social, political and economic relationships. Therefore, efforts to achieve a new international communication order are closely related to endeavours to establish a new international economic order. The struggle for a new international order in the field of communications cannot be separated from the struggle for the new international economic order. Both forms of the struggle for a radical change in the existing structures of the world and for more just relations share the same social and political basis. They are inter-related and inter-dependent.

It is becoming more and more evident that international economic relationships cannot be changed substantively without changing international relationships in their entirety, not just in the base but also in the superstructure. The new face of the world has to be perceived comprehensively, because the changed, just and more equitable order cannot be shaped without substantive changes in other spheres, not least in communications.

The significance of the new international communications order and its inter-relationship with the economic order was stressed at the Colombo non-aligned summit. The delegates declared that 'a new international order in the fields of information and mass communications is as vital as a new international economic order'.

Existing disparities and imbalances cannot be resolved and remedied by mere automatism. Conscious, radical actions and fundamental, revolutionary changes are needed to achieve fundamental changes in the prevalent relations in international communications. The establishment of a new international communications order therefore means a keen struggle to change the existing socio-economic relations. It comprises also the fight to eliminate all obstacles in the way to political, economic, cultural and

mental de-colonisation. It is manifest that the adoption and carrying out of the main principles of the new international communication order requires a long and strenuous political and economic struggle at the international level as well as the national level.

This awareness is shared in many quarters of the world, but mostly in non-aligned countries. Their endeavours to change existing relationships in the international context were in the early history of the non-aligned movement directed primarily to the field of politics and economics. Thus, in 1961, at the time of the first summit conference of non-aligned countries in Belgrade, and later, communications were not mentioned in the final declarations and resolutions. The turning-point was the conference in Algiers in 1973 which foresaw that developing countries should take concerted action in the field of mass communications and enumerated possible means to this effect.

The next juncture was 1976, the year of the Colombo summit, the New Delhi conference of the non-aligned information ministers, and symposium of non-aligned countries on mass communication in Tunis. These important activities of non-aligned countries in the sphere of information have placed communications in the forefront of non-aligned countries' co-operation in the sphere of international communication.

The efforts of non-aligned countries have led to several tangible results. In January 1975 the pool of news agencies of non-aligned countries came into being. Then the Yugoslav news agency, Tanjug, and 11 other news agencies from non-aligned countries, began to transmit news with a view to strengthening the information flow towards the developed world and at the same time of intensifying the news exchange among the non-aligned countries themselves. Today, 44 news agencies of non-aligned countries participate in the pool. Their activity is raising notable interest in the world at large since this is the first palpable step towards creating a genuinely equitable international co-operation in the distribution of information.

Another similar step has been undertaken in the field of radio and television. The first Conference of Broadcasting Organisations of Non-Aligned Countries was held in Sarajevo in October 1977. The conference adopted a Declaration on Mutual Co-operation and Joint Actions and an Action Programme, which centres on four lines of activity of the broadcasting organisations of non-aligned countries: (i) the development and strengthening of the infrastructure of national broadcasting organisations in non-aligned countries; (ii) the principle of support to the least developed broadcasting organisations in non-aligned countries; (iii) the training of broadcasting personnel; and (iv) the encouragement of cooperation in the exchange of radio and television programmes.

The post-Colombo period has become an era of very active consultations on making concrete and operational the accepted and established broad principles of cooperation. The two actions undertaken in the fields of news agencies and broadcasting are highly significant, although they do not actually cover the whole field of communications. Film, journalism, periodicals, the publishing and distribution of books, copyright, the cooperation among journalists' unions, professional ethics, research in mass communication and other fields are still not encompassed by planned and organised activity towards creating new transformed relationships.

To bring about the new international communication order, it will be necessary to attain a series of objectives. These have differing scope and priority but must together be taken into account. They comprise the following elements:

1. A substantive change in the existing information system, in networks production and distribution, so as to establish more equitable two-way or even multi-way communication in place of the existing disparities and one-sided flow.

2. The mobilisation of political, economic and cultural resources to create alternatives to the present prevailing principles and values that subject the mainstream of information to the laws of a market economy, encourage a uniform consumer mentality and impose the political values of the big countries, the main producers and distributors of information.

3. A new substance to the right to communicate in both its active and passive aspects, so as to establish the international flow of information based on the full sovereignty of states, and a due concern for their realities, needs and aspirations.

4. The organisation of a more effective and adequate flow of information among the non-aligned countries themselves and to the world public in general, to acquaint world opinion with the truth about non-aligned countries.

5. The mobilisation of mass media; their integration into, one, national development and, two, the

processes of economic and mental de-colonisation and emancipation of non-aligned and developing countries.

6. The development of national communication infrastructures by the introduction of the most up-to-date communication technology with international backing and solidarity and relying on national potential.

7. The stimulation and extension of mutual assistance in formulating one's own communication policies with a view to accelerating the social and economic development in non-aligned, developing countries. (Martelanc: 'The Non-Aligned in the Struggle for a New International Information Order', *The Anthology of Radio Zagreb's Third Programme*, No 1, Winter 1977).

What is involved is an effort to substantively change the prevalent situation in international communications; the restructuring of the existing international communication network; the introduction of equal relations; and the elimination of the existing imbalances in communication. In short, an effort to wage efficiently the struggle for the establishment of a new international communication order.

This process is far more complex than the attempt to improve and balance the flow of information. It will have to cover all aspects of communication and should become universal, if the global communications patterns and structures are to be radically transformed and if the new international communication order is to see its day.

INTERACTION AND FREEDOM

Franko Winter

In preparing for this topic I had an impression that the very definition of a 'global communications system' was something that was intrinsically static; that once it had been achieved it would remain as a fixed pattern. The pattern was so perfect, according to some people, that there was no need to change it. It might be necessary to make certain corrections, to tidy it, but certainly not to undertake any deep or substantial alteration. I am glad that I was wrong. The discussion which has taken place so far has demonstrated a very high degree of engagement with the problems of the world's communication, and a concern to discover not only what is happening today, but also what is ahead.

I agree with the assertion that the demand for the new order is not an entirely new demand but rather an ever-present concern, constantly repeated. Why is this? Obviously not just because some of us want 'order' and 'system' in the same way as some are against it. We do not want some abstract order simply because of lack of an existing order, for the sake of an order; but because the system that now exists is a system of whose specific character we do not approve.

The opposition to the new, to the changing of present routines, does not arise only among those who suppose that they will lose something by the new. That kind of choice between 'new' and 'old' would be much too simple, and obviously does not exist in practice. All of us are given to a certain caution towards events and actions which depart from the familiar pattern of things, towards whatever suggests that the things we have been taking for granted are not of universal validity, or that the people who for various reasons have been prevented from access to certain values now want to share and profit from them. Our own freedom, welfare and principles of behaviour must and can be valid only in the world, environment and society in which we move and live.

Certainly this stance does not authorise me to consider that my way of understanding, my way of life, my principles, opinions, are goods to sell – or, even worse, goods that have to be bought. But I have a duty to help to make the advantages of civilisation, whose inheritance we all share, become indeed the advantages of all men and all nations; and to do this as part of the general effort towards the community of freedom and equality between nations, in which the legacy of past backwardness, particularly the legacy of colonialism and foreign domination, disappears.

At first sight it might seem that what is said above does not have much in common with the 'global communication order'. I felt it necessary to say something on these lines, however, if only in response to the other expositions given here. I am more optimistic than those who assert that the existing variations in approach are irreconcilable and that the world is divided into a 'Western world' and the 'controlled society'. I do not think that there is only one choice, nor that the contemporary

world can be divided into its 'white side' and its 'black side' in this way. We have to find ways, democratic and tolerant ways, to crystallise those processes and intentions, not towards stagnation but towards progress, along new and unexplored roads; not for some future world, but now.

These preliminary remarks are an introduction to the topic suggested by the First Conference of the Broadcasting Organisations of the Non-Aligned Countries which took place in October 1978 in Sarajevo. What were the conference's basic aims? One of its documents, the so-called 'Declaration', gave the best short answer. It said the conference was intended to speed up "the processes of emancipation and development of the national services of the non-aligned countries, as a constant part of the fight for universal political, economic, social and cultural independence of their nations and for their right to inform and to be informed objectively and directly".

Based upon these principles, the conference succeeded to discuss, in my opinion, some of the essential questions of interest to all broadcasting organisations in non-aligned countries. It found common denominators for action in which each organisation could find a part of its own interest; it reinforced the sense of community and the need to understand and consult; and it stressed the need to search out democratic and flexible forms of organised cooperation in the period between conferences. It made these priorities:

> the development and improvement of national broadcasting organisations, as the precondition for any mutual and larger international cooperation; particularly bearing in mind the importance of assistance to the least developed broadcasting organisations, and the liberation movements, within the non-aligned movement.
>
> the definition of the practical measures to be taken in the vital areas of programme and technical development, and cadre cooperation.
>
> the readiness to accept all those who are ready to cooperate according to the principles of non-alignment. The Action Programme explicitly underlined that it "affirms the wish that common efforts contribute to the creation of a new international information system and to making efficient improvements in cooperation with broadcasting organisations all over the world, on the basis of equality, mutual benefit and respect of the principles of non-alignment".

What were the origins of the conference, apart from such formal elements as the meeting of presidents and prime ministers of the non-aligned countries? Obviously, it is the twin belief that while the press, radio and televison are extraordinarily powerful and have an immeasurable impact on all areas of contemporary life, yet they remain dependent on traditional relationships and positions which have been surpassed by that life, by the new international situation and its circumstances. The reaction to this imbalance was inevitable. The basic orientation has been on the lines of abolishing one monopoly and not making a new one. It has not gone to the other extreme and favoured isolation and negation, but sought the acceptance of all positive contributions that might be offered from any side. The aim is not to refuse to cooperate with others or to refuse to use the cultural legacies of all countries and civilisations – which are, indeed, the welfare of all – but to demand the incorporation of our own values into the whole treasure chest of man's achievements and progress.

I think it is therefore the need of our times to look ahead and welcome these new trends in the global communications system. We should act as the messengers of the new – or, if you wish, of the old but ever present – ideals of man to live and work in equality of privilege and right. Or, again, as it was formulated by the First Conference of the Broadcasting Organisations of the Non-Aligned Countries, to contribute efficiently and "with united efforts to the development and reinforcement of the new international information system, based upon equality and justice".

Finally, let me look back once more at the notion that freedom and interaction are two sides of the same coin. It might seem to be overly scholastic, but my best belief is that the origin of all our efforts is freedom. Without freedom, interaction becomes dependence. The origins of all our discussions must be freedom and independence.

THE FLOWS OF TELEVISION

Peter Gould

In discussing the International Television Flows Project (ITFP) we have to start from one extraordinary fact. We are all aware that television represents one of the most dramatic and visually potent forms of

human communication, but at the international level there is simply no information about the movements of programmes, equipment, personnel, capital flows, and so on between one country and another. We literally, and I cannot emphasise this point enough, *we literally do not know what is going on;* we do not even have the basic facts, let alone insightful analyses into complex areas of international human communication based upon complete and necessarily large, complex, and above all *hard*, data sets.

Several years ago now, Kaarle Nordenstreng and Tapio Varis conducted a small survey in the area of international television flows. I think it is fair to say that their slim UNESCO pamphlet has become the Bible, although they were both scrupulously honest in pointing out the grave faults of their own pilot study. The samples are small, the descriptive classification too simple, and the analysis barely goes beyond computing a few percentages. In saying these things I am not criticizing their pioneering efforts at all. They expressed precisely the same reservations. But clearly we can do better than that today – in part, because they made the first effort.

The collection of detailed data on international television flows, and subsequent analyses of a more advanced form than we have seen before, have three important contributions to make. The first, of course, is related to the strong policy implications contained in the knowledge based upon an analysis of reliable facts. Policy making essentially involves steering a complex system towards some desirable goal. We are all aware that we cannot steer anything simple or complex, unless we know where we are now, and where we want to get to. In brief, making proper and effective television policy involves reliable information, and the manipulation and analysis of that information into coherent and readily understandable policy statements. At this point in time, nobody has reliable information about international television movements, which means that nobody is in a secure position to make really effective, well-founded policy in this area.

ITFP started originally as an atlas of television. We now perceive such a form of presentation as one of many possible forms and languages to state the results of what must be a very large international research programme. Nevertheless, the very idea of an atlas contains within it the notion that graphic languages can be important for summarising and presenting large quantities of complex data. It is worth pointing out that modern cartographic research has greatly extended our way of looking at the world. Indeed, it has redefined the very notion of the word 'map'. Some of you may recall that I wrote briefly to such an idea in the two part essay in *InterMedia* entitled 'The Languages of Our Investigations.'

In brief, we could start with a table or matrix of flows representing movements of television programmes of various types between the countries of the world. Then, thanks to the computer revolution, we could transform the maps of the world out of conventional geographic space and into more pertinent and relevant television spaces. In these spaces the distances between countries could be related to the amounts of television material they exchange. Countries which exchanged a great deal would be close together in the space, those that exchanged very little would be far apart. For example, Britain and Australia would be close together, although they are far apart in old-fashioned geographic space. In contrast, Cuba and the USA would probably be far apart in any television space we could construct. Such maps can also be made for various categories of television programmes.

I would suggest that the world in child television space would have a different configuration from the world in adult television space. I believe there may be some evidence that children's programmes flow far more readily and easily between countries than do the adult programmes: despite deep religious and ideological differences, we seem to agree, as a human family, about the basic values we expose our children to, at an age during which they are still 'innocent', before they have to be 'protected' from alien adult ideas by selection, editing, censoring and refusal. We are all aware, of course, that children's programmes can carry values of one culture that are inimical to those of another, but in general the constraints on such movements may be less severe.

Such a collection of maps would have immense policy value. A Third World country, for example, could see exactly where it lay in relation to other countries of the world. If it did not like being close to country X or Y in television space, it could make deliberate policy decisions to steer itself to another location. Moreover, if such flow matrices could be constructed annually (and there is no reason whatsoever why they could not; one of the main hopes of the International Television Flows Project is to lay a foundation of effective information gathering), then a country could monitor its position in television space, and actually examine and evaluate whether its policy decisions were effective or not.

But these graphical languages can give an even more dramatic picture of the 'state of the world in television space.' Because the flow matrices are not symmetric – that is to say, country A may send more television programmes to country B than vice versa – we can show the resulting asymmetries (what

Nordenstreng and Varis called 'the one-way streets') as a series of vectors or arrows acting on each of the countries. The meteorological analogy is quite exact, because these are the net winds of influence blowing through the television space. I suggest that such maps would show a very clear world configuration of centre and periphery, with only small breezes of influence blowing in the centre, but with howling hurricanes blowing against the Third World on the periphery.

Unfortunately, we cannot construct such maps at the moment, because we do not have the basic data with which to work. I cannot repeat this too often; we simply do not know the basic facts, what is going on, at the international level.

I think it is also important to point out that such maps and graphic analyses are two-edged swords. There is no need to be afraid of this, for all scientific knowledge is two-edged. It is only when such knowledge is placed in limited hands that it tends to be used destructively, or for the personal economic advantage of a particular group. In brief, all the graphic (and, as we shall see in a minute, algebraic) analyses from the ITFP can be used by various groups of people. First, they will provide a clear and accurate picture of a very dynamic situation in human communication, and may be used therefore for policy-making by people in all countries. Equally, the knowledge could be used by market research analysts of international companies, who may use the same information to spot weak markets or locate countries 'in need' of intensive sales drives.

One thing is even clearer. The ITFP is a totally open scientific inquiry, and all the analyses and results will be published – and the root of that Latin-English word means 'to make public', or, as the Oxford dictionary puts it 'to make generally known, to noise abroad, to announce formally'. And note that none of the data we require are sensitive in themselves: indeed, television programmes are broadcast daily into the public realm, and it is difficult to think of anything more open and less secretive than that. Rather, the question is what the programme contain, and what cultural values are carried by the physical flows of television materials.

Our international television research is a story still in the making, but one whose outlines we can clearly see at the present time. It could be said, in a highly conventional way, that we are concerned with programme classification and coding. To state our concern in such a conventional way, however, would not convey the exciting, and quite revolutionary, approach that we have taken to date, an approach we are still developing at Penn State and Cambridge Universities.

A succession of various groups over the last 20 years has tried to grapple with the problem of collecting and classifying broadcasting statistics in such a way that reasonably accurate comparisons can be made. The problem is that those who have tried to grapple with these difficult questions have approached them in what we have come to call a 'partitional mind set' or 'partitional thinking'. That is to say, a good classification is conventionally defined as one which puts things is quite separate little boxes, even though the things we want to classify may be highly ambiguous and overlapping and resist such partitional approaches.

We are getting very deep here into a mode of thinking, a conceptual approach, that seems to be particularly characteristic of the Western world. It is our contention today that such thinking about complexity has become totally dysfunctional, and it is no longer necessary in light of the prosthetic intelligence we have in the form of large and very fast computers. It would certainly be difficult to think of any human artefact more richly ambiguous than a television programme, and it is little wonder that television programmes have resisted the archaic and conventional taxonomic of classifictory schemes that have been devised for them. It is interesting to read how those charged with devising conventional partitional schemes view the data as 'intractable'.

It is about time that we left such anthropomorphic views behind us, because data simply *are:* they are neither good or bad nor intractable. If they appear difficult to sort out and analyse, it is the approach that the investigator is taking, the a priori scheme he tries to impose upon ambiguous data, that is at fault. For example, a film shown as a television programme may have aspects of crime, comedy, romance, and even social commentary based upon a particular set of values held by the film writer, producer, or director. We cannot put such a visually and conceptually rich programme into a single box labelled crime or romance or comedy. We need to capture in our recording language the highly connective structure, rather than tearing it apart and arbitrarily stuffing it into inappropriate pigeon holes.

It is for this reason that we have adopted an algebraic language for the coding and classification problem. Quite apart from the subject matter content of television, it represents an exciting and rare example of writing a mathematical language suitable for a problem in the social sciences, rather than borrowing a weak and inappropriate language from the physical sciences, and then trying to warp rich human data into conformity with it.

The first attempts to use such a language were recorded in the first *Discussion Paper* of the ITFP, but we have made radical revisions and extensions since that time. One of the major advances was made by Ronald Atkin, the mathematician who originally wrote the language in algebraic topology, who made the distinction in television programmes between the notion of 'backcloth' and 'traffic'. These technical terms separate those words which describe the basic descriptive structure of a television programme from those which describe the intention of treatment of particular subjects.

For example, we might have a television programme effectively described at some hierarchical level by the terms Nature, Landscape, and Dam Building. We can think of these three terms connected together in the form of a triangle, a geometric figure that might form part of a larger geometric (strictly topological) structure called a simplicial complex that actually describes and gives definitive meaning to the notion of programming structure. This is all part of the backcloth, the structural geometry of subject matter created (perhaps unwittingly) by those who plan television programming. But such structures may be 'mapped on to' other descriptive terms which we call traffic. These may characterise the potential audience, the intent of the broadcaster, and so on. For example, we could easily imagine a programme on Nature, Landscape, and Dam Building for children which would be rather different from a programme intended for adults. We might even have academic traffic on such a backcloth, for we can easily imagine a programme of the Open University discussing these subjects with a high degree of technical detail. Or we might have a panel discussion on these same connected subjects, or even a programme whose purpose was the aesthetic enrichment of the viewing audience, trying to make them more sensitive to the aesthetic damage caused by the technological disruption of dam building. Notice that in all these cases the subject matter remains the same, as part of the permanent structural backcloth, while the traffic words vary considerably.

Let me give you two simple, but quite specific, examples that have just developed from the experimental work on one week of British television that we have conducted at Cambridge. I shall simply take two descriptive terms CRIME and MENTAL HEALTH, which we may think of as geometric figures called polyhedra embedded in a much larger, multidimensional programming structure called the backcloth. I must ignore the algebraic technicalities here, but it is important to realise that these terms, which form part of the overall programming structure for that week of television (a composite structure, incidentally, derived from all television shown in eastern England that week), these terms can take traffice which can itself be aggregated up a well-defined hierarchical structure of increasing levels of generality. And note two important things: first, policy appears to be made on the basis of such higher level statements, for the simple reason that high level policymakers simply cannot absorb the explosive plethora of fine-grained detail that even a single week of television in Britain generates. Nor should they be expected to: the trouble with many policy reports is that they weigh five kilograms, are seldom summarised accurately and succinctly, and are never read. Winston Churchill, with his requirement of a single sheet of paper – 'One sheet of paper, or do not bother me, Sir!' – knew what he was talking about.

But, secondly, the structure of the data, the algebraic and topological structure of the data, is such that every high level generalisation can be traced right down if necessary through the structure, back to the original programme. Scientifically, this is important: we must be able to accept, challenge, marshall evidence, and present the data which are as hard as we can make them. The examples I am going to present to you are not soft and fluffy, but the hardest statements I believe have ever been made about television programming.

Let us consider CRIME and some of the traffic it takes at the three levels we shall call N, N+1, N+2. In this example, what we shall call 0-dimensional traffic is simply the number of minutes devoted to various treatments of the subject matter CRIME. At the N-level, the vertex CRIME took eleven types of traffic, amongst which Serious General Talk took 75 minutes, Ethical Concern 75 minutes, Cinema Movie 375 minutes, and TV Movie 935 minutes. At a higher level of generalisation, where CRIME was mapped on to five forms of traffic, Information Elaboration took 77 minutes, Enrichment 30 minutes, Value Projections 77 minutes, Light Entertainment 445 minutes, and Dramatic Performance 1,430 minutes. Finally, at the high N+2-level, we have only four types of traffic, Educate, Inform, Entertain, to which we have added Value Projection. Educate maps to 30 minutes, Inform to 77, Value Projection to 77, Entertain to 1,500.

Let us now consider the second example MENTAL HEALTH, which maps on to twelve types of traffic at the N-level. Such traffic as Academic Instruction takes 100 minutes, Current Affairs 15 minutes, Social Adjustment 125 minutes, Ethical Concern 145 minutes. But Comedy takes 100 minutes, Cinema Movie take 235 minutes, and we even have 25 minutes for Cartoon-Puppet traffic. At the N+1-level, the seven forms of traffic include Enrichment 100 minutes, Value Projection 200 minutes, but Dramatic Performance and Light Entertainment take 304 and 125 minutes respectively. Finally, at the high N+2-level, Educate takes 100 minutes, Inform 130 minutes, Entertain 329 minutes, and Value Projection 300 minutes.

I shall not comment upon or judge these examples. I think you will agree that even these very simple and easily grasped ideas say something very dramatic about the structure of TV programming in a part of the UK based upon truly hard data and very careful and patient analysis.

Notice one thing more: in discussing such notions of backcloth and traffic in this algebraic language with you, I have barely mentioned numbers. Broadcasting time happened to be a numerical traffic, but a much more fundamental concern is with the words, and how these words are defined and structured into hierarchical sets. The second stage of this work is just being completed at Cambridge now, and I believe we have made a new and significant step forward with implications for the social sciences far beyond the subject matter of television programming itself.

Many of the ITFP *Discussion Papers* will appear, and will actually be, rather technical, and I want to talk specifically to this point for a moment. The human material with which the social sciences deal is extremely complex. Many of us, both within and without the professional social sciences, would argue that the material is more complex and difficult than that of the physical sciences. I do not wish to argue these distinctions here (they are not as strong as some of us like to think), but merely point out that difficult material sometimes requires difficult and unfamiliar methodologies and approaches. Sometimes the technicalities create deep resentment among those not trained in these particular and appropriate languages. Lionel Trilling, one of America's most distinguished humanists, wrote in 1972:

> "(The) exclusion of most of us from the mode of thought which is habitually said to be the characteristic achievement of the modern age is bound to be experienced as a wound given to our intellectual self-esteem. About this humiliation we all agree to be silent, but can we doubt that it has its consequences, that it introduces into the life of the mind a significant element of dubiety and alienation which must be taken into account in any estimate that is made of the present fortunes of mind?"

I have commented upon these sorts of things before, but it is curious how people, who willingly acknowledge their ignorance in astrophysics, and take it for granted that a technical paper in this field may be totally beyond them, nevertheless expect all materials in the far more complex human sciences to be instantly and effortlessly comprehensible to them. Perhaps it is because we are all human that we resent the idea that all human phenomena may not be readily understood. Unfortunately, this is not the case and, sometimes, we have to take off our coats and get to work and do some difficult learning to understand what is going on.

Nevertheless, and perhaps seemingly contradicting my previous remarks, I am deeply concerned about communicating the results of these very new and different approaches to people who are not professional social scientists. The latter have no excuse: if they are really professional they have got to take off their coats and get to work. But for those who are not, who live busy and time-demanding lives in other professions, I believe we have a responsibility to convey the essence of these new ideas as clearly as we can – even at the inevitable price of some oversimplification. It is for this reason, and from time to time, that we shall be producing a *Discussion Paper* specifically designed for those not in the social sciences. The first one, No.5, on programme recording and classification, was published at the end of the last year.

The third and last area where I believe the ITFP can make an important contribution is in the experience we have gained in handling and manipulating very large bodies of television data. Thanks to Graham Chapman, the European Regional Project at Cambridge started off on the right foot by adopting a computer data handling system devised in West Germany called ADABAS. This computer storage system is able to record, store, sort and manipulate large quantities of verbal and numerical data – precisely the sort generated when you get into the complex area of recording television flow materials and programmes. I believe the experience at Cambridge has very important implications for the national recording of comparable statistics in television, and that only if common methods of recording and storing data are adopted will we ever get a clear picture of the dynamics of international television. After all, this is what all those various committee reports were about. But this takes me right back to the first point about the deep policy implications contained in this research. Each country must realise that it is dependent upon the others if it is to see itself in world television space. A global analysis requires the cooperation, good will, and above all the policy interest of all countries. From this perspective we are indeed one world; but we must sharpen our understanding and policies with real knowledge, not folklore, if we are to steer these complex systems towards goals that may well and properly vary from one time to another, and from one part of the human family to another.

Let me briefly summarise: we are trying to develop an international research project in an area of

virtually total ignorance. It is our contention that policy-making, in any rational proper sense, is impossible under such ignorance. To make any further progress with ITFP, funding at an appropriate scale is absolutely mandatory. It is here that we have met with some of the greatest difficulties: I sometimes feel I could write a book about my experiences over the last three years on the international funding of communications research! Judging from my estimates of the European, Latin American, and Arab World Projects, we shall need between $200,000 and $400,000 for each regional programme; programmes which are considered to be part of a mutually supportive and cooperating structure. Let me emphasise that each regional project will be conducted by people within the region (there is no question of North Americans and Western Europeans imposing their views on another part of the world).

With approximately 10 regions, and some areas of overlap and economies of scale, it means that we shall need approximately two million dollars to conduct the basic analysis. From that point on, having laid the basis of data collection and analysis, it should be a relatively simple and inexpensive matter for each country to update its data files, re-analyse its own programming structures, and contribute to an annual re-analysis to provide, on an annual basis, the international picture. The sum of two million dollars is quite small relative to the annual amount involved in the international television industry, or in terms of learning about what is actually going on in this vital area of international human communication.

Nevertheless, support is elusive. The National Science Foundation of the United States has helped with the initial methodological stage, but obviously cannot support the administration of the global programme, or national efforts in other countries. The Social Science Research Council of the United Kingdom has supported the European Regional Project based at Cambridge. The Ford Foundation has contributed to the central direction at a crucial stage. But we have experienced difficulties elsewhere in raising support, and these difficulties have come at particularly critical times. Thus, I leave you with the question: is international television a truly researchable topic today?

Note

This paper is based on the author's Discussion Paper, *The International Television Flows Project: An Overview and Assessment,* which was prepared for delivery to the 1978 Annual Conference of the IIC.

2. Space Communications

Within the next few years a range of technological innovations and tests will radically accelerate our ability to use space for communication. The inauguration of the US Space Shuttle and the rapid development of the USSR counterpart will re-awaken the public's interest in space while a series of improvements in launching, transmission and reception will make space communications more easily available, and cheaper.

In this article, Delbert Smith, NASA Consultant and editor of *Satellite Communications*, analyses the likely development of US technology and its applications.

THE FUTURE OF US SPACE COMMUNICATIONS

Delbert D. Smith

> 'While highly commendable progress has been made toward the improvement of worldwide communication through the use of satellites, much remains to be done. There must be no let-up of effort through lack of funds or indifference'. *Satellites for World Communication*, Report of the Committee on Science and Astronautics, US House of Representatives, 17 April, 1959, p.9.

Since 1959, when it developed through project ECHO an aluminium, inflatable 100-foot diameter sphere that could reflect communications signals, the US National Aeronautics and Space Administration (NASA) has been a leader in the research and development of satellite technology. Santiago Astrain, Director General of INTELSAT, the international organisation which operates the largest global satellite communications network and which carries 60% of the world's overseas international telecommunications traffic, has stated that NASA's 'experimental communication satellites laid the technological foundation for the initial INTELSAT system . . . After INTELSAT became operational in the mid-1960s, the US space programme continued to serve as a basic source of new technologies and, in some instances, of new services as well'. [1]

The question of how communications technologies and services are matched – in terms of development, trends, and assessments – depends on the future scenarios that present themselves in terms of space implementation. For it is communication via satellite that will determine the development patterns; and these patterns in turn will be primarily based on past and present research and development activities. Similarly, trends and assessments will be affected by the likely direction of the technology coupled with an analysis of the most likely applications. Thus this paper will develop two themes: first, the likely progression of applications and, second, the scenario for technology development. Within this framework the integration of various specific systems will take place and the diversification into new service areas will develop.

NASA in the 1970s

During the 1970s NASA has been involved in two major activities that will heavily influence future directions in satellite communications research and development. The first was the experimentation performed on the NASA Applications Technology Satellite (ATS) series and on the joint US/Canadian Communications Technology Satellite (CTS). The second has been the planning and development of NASA's Space Transportation System (STS).

ATS and CTS

NASA has now completed Phase I (1969-1978) of its communication satellite programme. It primarily involved the ATS series and CTS. The experiments on *ATS-1, 3* and *5* marked the early beginnings of experimentation with communications satellites for the provision of tele-services. They were characterised by a random selection of demonstrations and experiments. At the same time, because they were the first experiments, all added to the base of knowledge needed; all were 'successful', and the notion of 'failure' was not applicable inasmuch as any result constituted a valid finding.

The experiments placed an emphasis on technology and the demonstration of technical capabilities, with service impact being secondary. They showed that there were services which can be provided not only better but perhaps exclusively via satellite.

The selection of experiments was passive rather than active. Users came in response to NASA's call for experimenters. Success was determined primarily by the investigators themselves rather than by any external review. To a great extent, this approach was more rigorous than if NASA had taken the lead. The researchers brought expertise in a given field to shape their experiments so as to provide specific answers to stated problems; as opposed to NASA designing experiments to fit the satellite vehicle.

The early ATS user programme represented the beginning of space technology development as far as the user – educators, medical personnel, and social service providers – were involved. Groundwork was laid in the area of societal applications as the capabilities of the early applications technology satellites began to be applied toward the solution of existing needs for biomedical communications, law enforcement, education and the distribution of radio and television programmes. These early ATS activities created the foundation for technical and social applications which generated awareness and the atmosphere of enthusiasm for continued and expanded applications experiments on ATS-6 and CTS.

NASA launched its ATS-6 satellite in 1974. A number of experiments were carried out, some in conjunction with ATS-1, 3 and/or 5 as supporting vehicles. The experiments were oriented to the user and covered medicine, health, education and international uses, served by the distribution of one-way programming, interactive experiments using both audio and video and interactive data transmission and teleconferencing.

Overall, the ATS-6 experiments represented a series of innovative, major efforts to use the special capabilities of the improved applications satellite for the benefit of society. Rather than mere technical exercises, they were to a much greater extent experiments in social service applications of the new technology, and will undoubtedly serve as models in shaping future social service experiments and teleservice applications.

In general, the experiments represent a significant step forward in the utilisation of satellite communications for non-profit societal needs. The most successful appear to have been the Alaskan medical, WAMI, and Veterans Administration projects – areas where the needs met could be measured almost in visible, physical, or quantitative terms.

A great deal of enthusiasm, generated by the early ATS successes and the promise of greater achievements via the more sophisticated ATS-6, raised expectations, in some instances to possibly unrealistic visions and goals. Inasmuch as the successes involved societal response as well as technological experimentation, problems were encountered in affecting these new approaches. Better results might have been achieved if clear-cut, standard performance criteria had been developed. Even though there were objectives, these were never tested or measured against expected criteria at the conclusion of the experiments.

Looking at the entire ATS series, we can see a gradual, albeit haphazard, transition from experimental to operational activities. The gap to be filled in this process is of an institutional nature.

The *CTS/Hermes* experiment, supported jointly by the USA and Canada, is now in its third year. It involves the distribution of programming (one-way multichannel distributions for educational programming); interactive experiments using audio, video and data transmission; the use of smaller ground terminals, both fixed and mobile, for receive and transmit; and interactive data and technical experiments.

The launch of the CTS satellite marked a new level in communications experimentation The advance technology permits more sophisticated uses such as multiple distribution and networking, more capability for interactive services, full colour video and data support capabilities. The concurrent development of small earth terminals permits easier access and broader reach to truly remote locations. Much of the new experimentation therefore appears to centre on bringing together all the technology in support of applications experiments. Among the experiments there is evidence of greater emphasis on community services and applications, and a more conscious effort is being made to implement operational services.

Variations in the approaches to experimentation are becoming apparent. The Canadian emphasis is on centralised ownership and control of the ground equipment, and on small scale experiments of short duration. The USA, meanwhile, emphasises comprehensive programmes, and user-owned ground equipment.

The Space Transportation System (STS)[2]

The second NASA activity which will have a significant influence on future space communications is the development of the Space Transportation System (STS). The STS is a manned, re-usable transportation system which will carry people and materials from earth to space orbit, enable the pilot to manoeuvre at will for extensive periods in that environment, and then return to Earth.

The shuttle orbiter is about equal in size and weight to a DC-9. It is designed for efficiency and versatility. Its cargo bay can hold up to 32.5 tons in a space 60 feet long and 15 feet in diameter – large enough to hold a wide variety of payloads, from interplanetary spacecraft and unmanned

satellites to spare parts for satellite equipment. The load might be a multiple one for several projects, or a single payload such as the spacelab, the complete scientific laboratory being designed by the European Space Agency for space experimentation by a number of European countries.

The shuttle will be launched into space in the same fashion as a rocket, operated in orbit as a manned spacecraft, and flown back to earth like an airplane. It has three main liquid rocket engines. For launch, these engines will be augmented by two solid rocket boosters, which are separated at an altitude of about 27 miles, parachuted to sea, and recovered. Fuel is provided by an external tank which is jettisoned just prior to orbiting and is the only part of the system which is not re-used. Once in orbit, the shuttle will be able to move about in space under its own power. While returning to Earth, the orbiter will be able to manoeuvre to the right or the left of its entry path – a cross range of about 1,270 miles – in order to reach its landing field either at Kennedy Space Center or Vandenberg Air Force Base. Its landing speed is about 210 miles per hour.

A typical mission of the space shuttle might last seven days, but could be extended for as long as 30 days. And it is expected that the shuttle could be readied again for the next flight within two weeks. With a life expectancy of about 100 possible missions for each orbiter, the potential use of the new vehicle seems virtually unlimited. The space shuttle promises to provide a totally new dimension in space travel in other ways. Its crew of up to seven, travelling in a two-level cabin, can include passengers not trained to the same rigorous physical fitness of the astronauts. They will ride in a pressurised cabin and will be subjected to a maximum of only 3 g's during launch and 1.5 g for re-entry.

The significance of the space shuttle is that it will make possible large space platforms. It will remain for planners in various national, regional, and international contexts to determine the uses to which these systems will be put. Research and development in satellite communications will lead to the implementation of a variety of systems.

NASA's Future Activities

Space communications, despite the magnitude of scientific efforts in the 1970s, still remains a significant challenge, compounded and enhanced by the advent of the space shuttle. The experience gained from NASA's Phase I communications satellite programme can be applied during the transitional Phase II (1978-1980) and fully expanded Phase III (1980-2000).

During the transitional period (Phase II) assessments will be made regarding Phase III space communication. It is likely that there will be the same dichotomy between experimental and operational systems as was evidenced during earlier phases, but with a refined mandate for NASA to become involved in a comprehensive communications research and development programme directly matched to national needs and goals.

As the ATS-6 and CTS series near completion, NASA is concentrating on developing and demonstrating space communications technology from which, later, a new generation of whole systems will be built. Research will be conducted on antenna configurations, power systems, frequency utilisation and on-board switching. Anthony J. Calio, Associate Administrator of the Office of Space and Terrestrial Applications, has stated that in 1979 NASA: 'will be completing the development of a high performance multiple spot-beam antenna. This technology could provide for the extensive re-use of the allocated frequency spectrum for various services, relieving congestion and avoiding interference while providing for future capacity to handle the expected growth of communications traffic . . . It will lead to economies of operation that will accelerate the transfers of space technology into the private sector'. [3]

The two main developments will be increased use of the STS, and the arrival of the space platforms. STS will have many effects, including the orbiting of much heavier payloads. Switching and related functions that are now located on the ground can be included within the satellite – or platform. Ground terminals will become simpler, smaller and cheaper. The demonstrable benefits of the new satellite communication systems will become affordable to many more countries including the many Third World countries that, while needing rapid extension of their telecommunications systems, are burdened by significant financial constraints.

NASA's other major development will be the large communication platform with a multitude of different antenna. The platforms could provide fixed, mobile and broadcasting satellite services; Earth observation; navigation; and general data collection. A major benefit of the platforms is that they can be shared by multiple users, and linked to small, cheap ground stations.

The arrival of multi-purpose space platforms will challenge many common-held precepts about the development of near-Earth space. Sharing by necessity could lead to sharing by design, for common purposes.

Benefits in the 1980s [4]

It is anticipated that NASA's future space communication experimentation with regard to new technologies and large space structures will benefit the nations of the world in all kinds of ways. The advanced capabilities of satellite communications will impact each nation in ways which are dependent upon their unique social, economic, and institutional configurations.

Commercial Applications

Several socio-economic trends that were set in motion during the late 1950s and early 1960s are already beginning to have a profound effect upon corporations in terms of their structure, operations and practice. The first of those trends, merger and conglomeration, has led to a general increase in overall size. The related development of decentralisation has come about in response to a number of factors, including the restrictions to growth in the traditional urban centres, employees' wage requirements and limitations of physical space. Another factor has been the need to diversify into new product, service or market areas in order to maintain profit margins in an age of rising production and energy costs. Many businesses have opened new plants, or relocated entirely, in areas of the country more conducive to growth. Together, the interrelated trends of conglomeration and decentralisation, by increasing the total communications requirements of corporations and institutions, have begun to place tremendous pressures on existing telecommunications systems.

There has also been some growth in the number and size of multi-national corporations that market goods and services on a global scale. The development of data processing, electronics, transportation, communications and advanced production technologies has made possible business activities on a scale hitherto unimaginable.

Another distinct trend has been the continuous rise in the volume of single account credit buying. The volume of such transactions as well as the increasing reliance of society upon the electronic transfer of funds, have tended to exacerbate the problems caused by the near-capacity operation of existing communications systems. These developments have necessitated the introduction and use of new communications services, such as computer-to-computer linkages and the remote, automatic, access to centralised data banks.

The long-distance communications requirements of business will continue to act as stimuli to the development and timely integration of new capabilities and services in the existing networks of information exchange. Business users wanting to reduce their operating and per unit production costs will probably be among the first to experiment actively with the new satellite communications services and to incorporate them into their routine management procedures. Three service areas in particular are likely to benefit from the further development and application of satellite technology: electronic funds transfer, teleprocessing and video teleconferencing.

Communication satellites will play a vital role in a nationwide, integrated, *electronic funds transfer* network by providing long-distance trunk linkage between the country's urban and commercial centres. In time, the network could come to resemble the public telephone system. Individual users would be connected to one another on a dial-up, switched service basis. It is not difficult to imagine such a system interconnecting the majority of the nation's banks, retailers, savings and loan associations, credit card firms, stock brokerages, business corporations, and other entities in the public and private sectors. Some of the types of transactions or services handled via the system could include inter-bank fund transfers, routine consumer purchases, bill payments, loan payments, wage and salary payments, payroll deductions, security quotations, and bond and stock market transaction arrangements. Eventually, electronic funds transfer systems will eliminate paper and cash transactions, except for small inconsequential purchases.

The second main service is *teleprocessing*. In combination with satellites and low-cost ground receivers, computers promise to revolutionise the processing of business information. The recent trend toward the dispersion and decentralisation of business operations has generated a need for new high-capacity communications services – in particular, for innovative and flexible forms of computer-to-computer linkage. The purpose of linking computer terminals at multiple sites into an integrated network is to centralise data processing, and to minimise the duplication of hardware and reduce corporate operating costs. The technology of communication satellites, with its characteristic versatility, presents an extremely workable and potentially cost-effective approach for effecting such linkage. Private companies will provide the user of the 1980s with integrated, private line, wideband switched message networks capable of handling user-defined combinations of audio, video, and data communications.

Teleconferencing can be defined as the exchange of information and data in a conference setting via electronic media – whether by cable, microwave or satellite. As a telecommunications mode, it involves the interconnection of two or more geographically separate locations and the transmission of various combinations of video, audio, facsimile and data signals between those locations. Teleconferencing

simulates direct face-to-face interaction (especially in the full, duplex, video mode) and can serve as an effective substitute for travel to and from business meetings. As business becomes more decentralised, so video conferencing becomes more practicable for the dissemination of product and marketing information among dispersed corporate locations, and for informing branch offices about new management policies and procedures. Specialised features can be incorporated into the satellite service packages, including optional computer linkages, facsimile services, security and scrambling devices.

Biomedical Applications

The relay of biomedical and other health-related communications constitutes a major potential application of satellite technology. Satellite communication systems will contribute to the solution of some of the most significant problems faced by the medical community today. As health care technologies and procedures have become more complex, the cost of training medical personnel has risen and specialised medical facilities and services have become increasingly concentrated in a few urban areas. It is difficult for practitioners in small communities and rural areas to keep current with advances in their profession. The time spent accessing medical information is often wasted, resulting in increased costs to the patient and a diminished quality of services. The current situation can be characterised by high costs; an inequitable distribution of resources; inefficient information exchange networks; and mounting requirements for administration and record-keeping.

Satellite technology will support the provision of a variety of services. It can provide medical information services for linking health care facilities into regional and national networks; remote assistance services in order to make available the expertise of physicians and specialists to populations in isolated rural areas; specialist-to-specialist networks for the dissemination of research results and other information; and public health systems designed to facilitate the flow of health care information to the general public.

One of the major problems of the medical community is how to keep individual practitioners abreast of the latest developments. A dedicated user-oriented satellite system, specialising in biomedical information, could link major health care facilities around the country to facilitate the flow of medical information and research. The user would have ready access to journals, periodicals and other information resources located at distant medical facilities. Printed materials could be transmitted to the user via voice-grade channels and then either displayed on a softcopy viewing terminal or reprinted in hardcopy form. Medical information access terminals will eventually be installed at individual physicians' offices and at community clinics in remote areas throughout the country.

A variety of telecommunications media will make the medical resources of large hospitals and other facilities, usually located in or near metropolitan areas, available to people who otherwise would not have access to them. Some of the anticipated services within this general applications area are remote physician tele-consultation, multi-phase screening, tele-diagnosis, and remote monitoring. The ultimate beneficiaries of satellite-mediated remote assistance services include not only rural populations but the inhabitants of urban areas.

Educational Applications

Educational institutions have already amassed considerable experience in the use of telecommunications media to further objectives at all levels of the educational process – from primary school to post-graduate and continuing education. And educators have been keen to make the learning process both more individualised and more equitable in terms of the availability of educational opportunities.

The primary value of communication satellites in terms of educational progress resides in their ability, first, to serve as mechanisms for the dissemination of educational television programming and, second, to extend the limited educational and human resources of a school or university to individuals located in distant communities or in isolated rural areas. The benefits of satellite technology fall into three general applications categories: computer-assisted instruction; educational television broadcasting with an optional two-way interactive capability; and educational information services.

One recent development in educational technology which promises significant benefits to society is *computer-assisted instruction* (CAI). In a CAI system a student uses a remote terminal, consisting of an electronic touch-pad and a video display screen, to interact with a computer on a real-time basis. Students work at their own pace, and receive immediate feedback. They are also able to use a CAI terminal at their own convenience. Eventually, such terminals could even be installed in the student's home as part of an information console consisting of a television monitor, audio and video recorders, slow-scan display screen and freeze-frame devices, as well as a microphone and touch-pad for interactive communications. Schools and other learning institutions could be linked to an interactive CAI system on a regional basis. Eventually, a large number of school systems could be linked to a number of computerised instruction networks offering a vast array of CAI programmes.

One of the most significant satellite activities may be the provision of *educational television services*. The use of satellite technology for interconnecting selected schools on a regional or national basis could serve a variety of purposes.

i. It would promote the equalisation of educational opportunity by making available the resources of urban centres to schools in remote areas.

ii. It would enable school systems to share educational programming and teaching practices.

iii. Access to satellite facilities could provide teachers and administrators with additional opportunities for continuing education.

iv. It would enable both students and teachers to participate in projects of national significance.

v. Satellite access could facilitate cultural exchange.

An *educational information service*, connecting users at remote locations with centralised university and library facilities, could be of value to the entire community as well as to student populations. The services offered via inter-library exchange applications of satellite technology include resource sharing, remote browsing, information retrieval and document delivery. Another important service includes the reproduction via facsimile of pages of library material.

Benefits in the 1990s

The creation of multipurpose space platforms in the 1990s will provide capabilities for some very advanced communications systems such as small mobile transceivers and, possibly, wrist radio telephones. Other communication applications appear to be limited only by imagination.

A space platform with a large multiple-beam UHF antenna could provide tens of thousands of voice channels for hundreds of thousands of mobile ground terminals using hand-held or vehicular-mounted transceivers with whip antennas. In the continental USA, for example, the monthly costs to a user would be in the range of $90 to $150, including leased and maintained ground equipment. A small mobile transceiver system would require a satellite with a large antenna (possibly as large as 200 metres); a multibeam antenna feed system; and a large number of receiving and transmitting channels.[5]

What today would be termed the ultimate in personal communications is a personal telephone system consisting of an extremely large switchboard-in-the-sky and wrist radio telephones (it is conceptually equivalent to the digital watch of today). For the USA, a network would require a system of 850 beams for cities and another 7,000 beams for the rest of the contiguous land area.[6] To reach such a system requires significant progress in the technology of antennas and switching capabilities, as well as the existence of large space structures; however, an estimated 25 million users in the USA in the 1990s would make the concept economically viable and worthwhile.

The cost of the wrist telephone could be as low as $10.00. In the contemplated US system, a ten-year amortisation of the estimated costs of research and development, demonstrations, shuttle launches, satellite construction and ten years of maintenance, divided by the estimated number of users and channel loading for such a network, establishes a cost of $0.01 per user-minute.

The Integration of New Technology

The integration of NASA's new technology into operational systems on a worldwide basis to produce these benefits will necessitate the international, institutional, resolution of certain international issues. At present, several issues pose a barrier to the creation of such operational systems.

The geostationary orbital arc and the electromagnetic spectrum resources are not depletable in the same sense as are fossil fuels, but they are nevertheless finite commodities. It is apparent that the two most important issues awaiting resolution, before the potential for satellite communications can be realised by all nations, are the crowding of the orbital arc and the congestion of the spectrum. The resolution of both these matters must be derived from two sources: advanced technology, and cooperation among nations, leading to harmonious institutional configurations and agreements.

Near-term technological solutions will be based on the concept of the conservation of spectrum, which requires efforts directed towards satellite system designs which minimise the bit rate for each communications use (ie, voice, video), which minimise the number of hertz per bit, and which provide for the greatest possible use of shaped or spot beams. Such designs are now possible because of the space shuttle's ability to orbit larger and heavier satellites.

The movement towards cooperative solutions must be based on a general acceptance of the proposition

that the proper goal should be the maximum amount of benefit from space ventures within the shortest possible time. We are still exploring ways in which to maximise space benefits through experimental programmes and operational experience. Both of these activities should be encouraged and nurtured rather than hindered by restrictive agreements which operate against the goal of maximum benefits in the minimum time. Space resources are not depletable; technology will advance sufficiently to provide increasingly cost-effective systems; and users require time to educate themselves to take advantage of space communications. There is therefore no urgent necessity to discontinue at this time the present institutional, legal and policy frameworks which allow those groups with sufficient interest to pursue their planned development of satellite system free from overly burdensome restrictions.

One such burdensome restriction may be produced through efforts to classify the geostationary orbital arc and the radio frequency spectrum as part of the 'common heritage of all mankind', and then to attach to that phrase specific international claims of shared-ownership the result of which will inhibit the development of satellite systems by individual nations or groups of nations. The premise that it is in the best interests of all nations to foster maximum benefits from space in the minimum amount of time could provide a more rational meaning for the phrase 'common heritage of all mankind'. Such a definition could provide for a positive sharing of space benefits together with the development of the appropriate institutional structures to provide these benefits.

In the shuttle era it will become apparent that the technological advances now being contemplated will result in an increased public awareness in space matters. The most likely result is greater public advocacy for participation in space communications for the delivery of tele-services. This increasing demand, and the policy of allowing individual nations or groups of nations to develop satellite communications systems, will result, if no counter-measures were taken, in a proliferation of systems. It has been stated that:

> 'If one were to tally all of the domestic, all of the aeronautical and maritime, all of the military, all of the experimental, all of the regional, all of the specialised telecommunications services and all of the multipurpose satellites which are in service or planned for service in the 1980's, the total number of systems currently stands between 60 and 70, with no clear indication that this trend of rapid proliferation of satellite systems is diminishing'.[7]

There are two basic reasons why the unchecked proliferation of satellite systems would be undesirable. First, at some point, the congestion of the geostationary orbital arc and the frequency spectrum will produce an absolute limit on expansion of operational systems or the creation of new systems; and when that point is reached there will be severe international discontent. Secondly, it has been argued that a combination of individual systems into larger systems permits, through economies of scale, reduced user costs for space telecommunications and teleservices.

However, the technology of large space structures now being developed (through NASA's efforts), may be the technological counter-measure that will eliminate the problem of proliferation before it becomes acute. It is possible, for instance, that four geostationary space structures could provide the space segment requirements of all the present satellite communications systems, as well as the meteorological and other application systems.

International institutional cooperation to permit the creation of large space structures must proceed at the same time the technology is being developed. If this is not done, NASA's developments may be stopped from becoming operational, and the prospects for advanced space communications for all nations will not be realised to the full extent.

The optimal institutional configuration that could result from international cooperation may have a regional basis. Large structure operations will probably be neither global nor domestic, but rather hemispheric. The concept of regionalism – the grouping of nations by a common bond of policy and limited purposes – has been recognised for some time, and represents a valid principle of international organisation. However, the main aim should always be the maximisation of benefits from space by all nations, rather than matters of ownership. Whatever institutional arrangement can serve that aim, as well as permit the development of large operational space structures, should be implemented as soon as practicable.

Notes and references

1. Santiago Astrain, statement submitted for the *International Space Program Hearings*, US House Subcommittee on Space Science and Applications, May 16-18, 1978, p.4.

2. The material from this section is based on 'The Shuttle Program: Earth's Next Step into Space', *Satellite Communications*, April 1978, pp. 25-26.

3. Statement before the Senate Subcommittee of Science, Technology, and Space, pre-published copy, 1 March, 1978.

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5. This section is derived from N.B. Reilly and J.G. Smith, 'A National Voice Network With Satellite and Small Transceivers', *A Collection of Technical Papers: AIAA Seventh Communications Satellite Systems Conference*, American Institute of Aeronautics and Astronautics, April, 1978, p. 660.

6. The system description was presented by I. Bekey at the Seventh AIAA Communications Satellite Systems Conference, San Diego, California, April, 1978.

7. Astrain, op. cit., p. 15.

3. Information and Law

The interaction between new technologies and services and today's ever changing social and economic patterns pose serious challenges to international law and regulation. The debates on international legal issues in the United Nations, the International Telecommunication Union and elsewhere are exceedingly complex. International law is conceptually abstruse and awkward in practice. Yet it is the body of international law that, in the end, may enable us to control and exploit the new technologies, and fit them to society's needs, in the way we would wish.

THE LEGAL REGULATION OF INFORMATION AND DATA PROCESSING

Frits W. Hondius

The development of new techniques for the management and transmission of information calls for the corresponding development of legal rules, if we are to ensure social stability in a situation of such rapid change. These rules must satisy two basic requirements. In the first place, they must be able to keep pace with the rapid evolution of new technologies. The lifespan of a particular generation of technology may often be no longer than five years, yet it is not uncommon for a single lawsuit to take much the same time. The law should not lag behind, creating a legal vacuum; but nor should it rush ahead to prematurely fixed positions, which may create unnecessary obstacles to technological innovation.

In the second place, the international character of information technology makes it desirable that the relevant legal rules should be formulated concurrently and from the outset at both international and national levels. It is for this reason that international organ sations have been involved in the law-making process from an early date.

We shall concentrate here on the most recent chapter in the development of information regulation; namely, 'data protection.' Ten years ago, this term was totally unknown. It is of German origin ('Datenschutz') and denotes a system for the protection of the rights and interests of individuals through the protection of the computer-stored information relating to these individuals (known, in this connection, as 'data subjects').

Protection is provided on two different levels. On the one hand, information may not be stored or used if this infringes the fundamental rights or interests of individuals. This aspect of protection is usually referred to as 'privacy protection', although, as we shall see later on, more than privacy is involved. On the other hand, information which is legitimately stored and used must be protected against accidental hazards or wilful attacks. This aspect is called 'data security'. In the matter of privacy protection, the interests of record-keepers and data subjects may well be opposed; but the two parties have a common interest in 'data security', as it defends information against threats and hazards.

'Data protection' normally refers to the protection of the rights of natural persons vis-a-vis specific electronic records. The term 'macro-protection' is sometimes used to indicate the need to protect the rights and interests of broad categories of people, or of entire nations. A nation may become vulnerable when a large part of the vital information concerning it is stored or processed in computer systems which lie outside its jurisdiction. Such storage may be quite acceptable from the data subject's standpoint (for example when data is stored abroad, there is less risk of damage resulting from accidental divulgation) but it may be undesirable from the 'macro' point of view.

The idea of data protection arose in the late 1960s and early 1970s, when computer uses spread from previously restricted applications in fields such as scientific research, statistics and finance to a wide range of applications in the field of general administration. The latter application is now commonly referred to as 'data processing' (DP; ADP = 'automatic data processing', EDP = 'electronic data processing').

Apart from a vague social malaise that was provoked by computerisation (partly because of the fear that computers would make human work redundant) there was genuine concern that computers might lead to the excessive concentration of political and economic power. In the early years of data processing, before miniaturisation and distributed processing had been invented, computers were restricted to a few big users, such as central governments and large national or multinational companies. The efforts made by several governments to harness computing power in the national interest were frequently ill-received by the public, because they were presented in the form of rigid and mammoth projects. A further reason for popular dissatisfaction with computers was the fact that the new systems often fell short of the promises made by their commercial promoters.

Data Processing and Human Rights

The question of the social benefits of data processing was raised with particular insistence during International Human Rights Year in 1968. Both the Universal Declaration of Human Rights of 1948 and its European offspring, the Human Rights Convention of 1950, had been drawn up before the great information revolution and there was therefore uncertainty as to the extent to which these instruments guaranteed individuals the full benefits of information technology while giving them adequate protection against incursions by that same technology on their social, cultural and spiritual values.

For international organisations with worldwide missions, such as the United Nations and UNESCO, and for developing countries, the first issue was far more important than the second. As long as the availability of the technology itself is limited, there is little danger that it will cause harm to individuals. Hence the importance attached by developing countries to organisations such as the Intergovernmental Bureau for Informatics (IBI) in Rome, which set out to foster computer use as an aid to national development. However, considerations of collective interest also play a part in the industrial world. The EEC's data-processing policy in the early 1970s was based on the belief that a European computer industry and market must be stimulated in order to make Europe less dependent on non-European computer concerns. Only in the more recent past have the EEC institutions, and particularly the European Parliament, begun to focus their attention on the need for restrictive regulations on data processing to protect citizens' rights.

The lead on the second issue, the protection of individuals against the harmful effects of computer use, has been taken by the Council of Europe and OECD, working in close collaboration. OECD has devoted considerable efforts to fact-finding and policy studies in this field, while the Council of Europe has concentrated on the legal and human rights problems.

In 1970 at the behest of the European Parliamentary Assembly, the Council of Europe's committee of experts on human rights examined the effectiveness of the European Human Rights Convention and of the member states' domestic legislation with regard to protection of the right to privacy vis-a-vis various new scientific and technological developments. In its report, the committee concluded that, while recent national legislation provided adequate safeguards against the violation of privacy by means of various sound or image recording devices, the human rights machinery furnished no satisfactory remedies against computer abuse. The committee gave two reasons for this lacuna. First, human rights instruments are designed to protect individuals against public authorities, and not private parties. Human rights law cannot be invoked to protect a person against computer abuse by a private insurance company. Secondly, it was unclear to what extent the right of protection of one's privacy, guaranteed under article 8 of the convention, could be reconciled with other people's right to information, guaranteed under article 10.

Further arguments could be added to those mentioned by the committee: for example, the very nature of privacy makes it doubtful that people whose right to privacy has been violated will want to avail themselves of legal remedies, with the inevitable publicity which that would entail. More important, however, is the fact that it is not the right to privacy alone which is at stake when we come to consider computerised data files. In this connection, it is significant that none of the four data protection acts currently in force in Europe carries the word 'privacy' in its title.

It is to American legal scholars and practitioners that we must look for clear definitions, both of the classical concept of privacy and of the modern concept of identity. In 1888 Judge Cooley defined the classical right to privacy, in a case involving the press, as "the right to be let alone". This is every individual's right to a sphere (physical and mental) of his own, into which others may not intrude without his consent and where he is not accountable to anyone for his thoughts or actions. This notion has been elaborated in legal literature by Warren and Brandeis.

In modern society, however, people need something more than the right to conceal facts about their intimate private lives from others. Most people also have a definite interest in ensuring that certain vital information about them is correctly recorded with those who take decisions affecting them: employers, banks, insurance companies, doctors, etc. In 1968, Professor Westin defined this modern right to informational privacy as a person's right to co-determine the information stored about him by others.

The Council of Europe's Resolutions and National Legislation

Following the human rights experts' opinion that present national and international law was inadequate to solve the problems raised by computerised records storing personal information, the Council of Europe was asked by its member states to provide them with guidance for their future legislation in

this field. This opportunity was unique. Just for once, in a totally new field of law, divergencies between national legal systems could be avoided by pre-legislative harmonisation. Work in the Council of Europe started in 1971. The operation was a complete success, thanks to the fact that its committee of experts was mainly composed of civil servants and lawyers responsible in their own countries for the drafting of data protection legislation.

In 1973 and 1974, the Committee of Ministers approved two resolutions prepared by the experts (Nrs. 73/22 and 74/29), laying down a number of data protection principles, which member states were asked to incorporate in their domestic legislation. For reasons of expediency, the two resolutions dealt with data protection in the private and public sectors separately, but it was stressed that for all intents and purposes the rules formed a single whole. Comparison of the laws so far enacted in the member states (Sweden 1973, Federal Republic of Germany 1977, France and Norway 1978) as well as the bills before the parliaments of Austria, Belgium and Denmark and proposals made by various public committees (Netherlands, Spain, United Kingdom) shows that all these texts embody the main rules proposed by the Council of Europe.

We shall summarise these rules under three main headings: publicity, propriety, control.

The principle of *publicity* implies that, as a general rule, the existence of computerised records storing personal information should be made publicly known. Firstly, there should be no secret records. Secondly, the law should provide citizens with ways and means of ascertaining the existence of records. Methods of achieving this vary from one country to another. In most countries there will be master files or lists, which will be kept up to date by a public authority and open for consultation by the public. In Germany, publicity of records in the private sector is achieved through direct notification of data subjects by record keepers.

Publicity serves a twofold purpose. First, it facilitates social control over record-keeping. The general public, the press and parliaments are enabled to follow what goes on. Openness may help to avoid unnecessary hostility and can also lead to suggestions for improvement. Compliance with the publicity rules on the part of recordkeepers strengthens their sense of social responsibility and accountability. Secondly, the publicity rule is indispensable for individuals who want to exercise their right to control information stored about them in computerised records.

The principle of *propriety* means that computerised records must be of good quality and must be used for good, rather than evil, purposes. Furthermore, the decision as to what is good or evil must not be left to the computer. The French data protection act (Informatics, Data Files and Liberties Act of 1978) has put this principle with Cartesian clarity. Article 1 affirms that data processing 'must be in the service of the citizen' (must be good) and should not offend against 'human identity, nor against human rights, privacy, or individual or public liberties' (must not be evil). Article 2 adds that a decision involving an appreciation of human behaviour may never be based solely on a computer operation.

As a means of achieving the objective of propriety, both the Council of Europe resolutions and the national laws lay down a series of requirements applying to the quality and the use of information. Information should be correct, up-to-date, relevant to the purpose and collected by fair and lawful means. Information which is false, obsolete or otherwise inappropriate should be corrected or erased, as the case may be. Information should not be used for purposes other than those for which it has been collected. Of course, the last word on propriety and impropriety has not been said. Data protection laws are just beginning to come into effect and it will be some time before further insight has been obtained into the practice. There is, for example, no agreement as to whether the content of the information, or the context in which it is used, represents the greater threat to individual rights.

With regard to the question of *control* over the exercise of computing power, it should first of all be said that any attempt to develop a concept of 'ownership of information' is bound to fail. Unlike a material object, an item of information can be used endlessly without any signs of wear. Information which has been erroneously divulged cannot be forgotten by court order. The proper approach is therefore to define the rights and duties of the various parties involved in the collection, storage, processing and use of information. All data protection laws identify at least three such parties: the record-keepers, the data subjects and the supervisory authorities.

The most important contribution which data protection legislation has made to law in general (a contribution which is already beginning to produce side-effects in other branches of the law) is undoubtedly the subjective right of data subjects to know the information stored about them. This principle, which an English jurist has called 'habeas data' (and which French law somewhat misleadingly calls 'right of access'), implies, firstly, the individual's right to know in general about

the existence of records, to know more specifically that data about him are stored in a particular system and to know the content of such data; and secondly his right to demand the correction or erasure of improper information. As is usual, the law may allow certain restrictions or exceptions to this rule in the interests of the community (eg, information on crime), the person himself (psychiatric records) or third parties (eg, trade secrets).

In spite of these new legal safeguards, however, the average data subject is bound to be the weaker party in his relationship with the record-keeper (such relationships, for instance as those between patient and doctor, employee and employer, taxpayer and tax inspectorate). For this reason, most countries provide for a watchdog, a public supervisory authority. A not unimportant part of such an authority's task is to exercise surveillance over data processing by other public authorities.

With regard to control over record-keepers, all the relevant laws give indications as to who is regarded as being responsible for data processing activities. As yet, there is no full agreement as to whether professional data-processing specialists ('informaticiens') should be bound by a special code of ethics. Both the German Act (article 28) and the Council of Europe resolutions imply that this should be the case. Some countries, however, have reservations on this point.

Trans-frontier Data Regulation

The Council of Europe is at present involved in the drafting of an international treaty on data protection. The draft text of this instrument, which takes the form of a European Convention, is expected to be ready for discussion in the course of 1979.

The first aim of this convention is to transform the data protection principles laid down as recommendations in the 1973 and 1974 resolutions into binding rules of international law. A data protection system of this kind, shared by all the contracting parties to the convention will have the advantage of eliminating obstacles to trans-frontier data movement which some European states have felt obliged to include in their data protection acts. These restrictions, which they consider necessary for the protection of their citizens' rights, are in fact a limitation on the free international circulation of information. Some concern has been expressed in commercial and academic circles that these restrictions might be applied unduly strictly.

The second aim of an international convention is to resolve conflicts of jurisdiction and to counter the risk of a legal vacuum with regard to trans-frontier data flows or systems and data processing abroad (computerised record in country A, data subject in country B).

The third aim of the convention is to facilitate practical co-operation between supervisory authorities in different countries, on the understanding that such co-operation must be solely in the interests of the data subjects.

The emphasis in the draft convention is on Western Europe, an area characterised by intensive trans-frontier data flows and a multiplicity of legal systems. It is likely that, within the general framework of the rules adopted by the 20 member states of the Council of Europe, certain states, and particularly the Nine, may wish to share a more detailed data protection system. An expert group, set up by the EEC Commission, is working on this question (the outcome may be a directive), but is fully aware that this set of rules must be in harmony with the general Council of Europe convention. If necessary, the EEC as such may become a contracting party to the convention.

The question of more detailed co-operation between groups of contracting European states is one thing; it has also been suggested that, in view of the substantial data traffic between Europe and industrialised states in other continents, non-European states might be encouraged to join the agreement. Two possible and mutually compatible avenues are open. In the case of the Council of Europe, work on a binding agreement was preceded by a set of recommendations, and co-operation between Europe and other parts of the world might begin on the very same basis. It is felt that such co-operation could be fruitfully established with industrialised countries which share with the Council of Europe members common ideals concerning human rights, parliamentary democracy and the rule of law. A fruitful platform for this dialogue is the OECD, which includes among its members most of the Council of Europe member countries, plus Australia, Canada, Japan, New Zealand and the USA. At present, the OECD is working towards the adoption of policy guidelines on trans-frontier data flows and the protection of privacy, without excluding the possibility of an international treaty.

With a view to this second option, the Council of Europe's committee of experts has been instructed to draft its convention as an 'open' instrument, and to exclude provisions that would constitute a fundamental obstacle to participation by non-European states.

An important point in this connection is the approach to legal problems in countries with a common

law tradition such as Australia, Canada, the USA, and continental European countries. In the latter group of countries, which represent a majority in the Council of Europe, there is a preference for legislation that lays down general rules and broad principles. This has been the approach followed so far by the Council of Europe with its resolutions and subsequent work. The idea is that general rules should be laid down for all the different types of records in the public and private sectors. These rules can be made more specific for application to particular types of information system (for example, the Council of Europe has prepared a special set of recommendations for medical data banks). In the USA, however, the idea of an 'omnibus law' is greeted with scepticism and preference goes to a sector-by-sector approach: banking, health, insurance, etc. It should be possible to find an international formula reconciling these two approaches; for example, by providing for the application of the convention to various specified categories of record.

THE NORDIC SATELLITE PROJECT AND INTERNATIONAL LAW

A.H. Olsson

The five Nordic countries (Denmark, Finland, Iceland, Norway and Sweden) have very much in common as regards their economic development, cultural traditions, language and mutual understanding and for a very long time their politicians and public authorities have wanted to develop co-operation between them. The primary interest in cultural matters suggested that an increased exchange of radio and TV programmes would help to achieve the three main Nordic objectives. It would strengthen Nordic cultural unity; increase the choice of the listeners and the viewers; and give Nordic immigrants an opportunity to watch TV programmes coming from their country of origin.

A common Nordic satellite commission was therefore appointed to examine in a preliminary way the legal, technical, cultural and financial questions (and problems of programme policy) in connection with a system for the exchange of radio and TV programmes by means of direct broadcasting satellites (DBS). The commission published its report in June, 1977. The report was discussed in the Nordic Council (consisting of parliamentarians from all the Nordic countries) and elsewhere. In March 1978 the responsible ministers in the Nordic countries decided that the question should be further studied in order to elaborate a basis for a decision in principle as to whether a Nordic direct broadcasting satellite system should be established. This final decision is expected to be taken early in 1980.

In the Nordic project (Nordsat) of direct broadcasting satellites the programmes would be transmitted from a ground station to the satellite ('up-leg') and from the satellite re-broadcasted directly to the individual receivers ('down-leg') without the intervention of a ground station for reception and transmission. The down-leg could in principle be directed towards relatively specific coverage areas. The satellites would be placed 5° East, in a geostationary orbit about 36,000 kilometres above the equator. In the coverage areas the programmes could be received directly by dish-shaped antennae on individual homes or apartment blocks. It should, however, be mentioned that the programmes could be received (with a somewhat inferior quality) outside the coverage area by means of somewhat larger antennae. The satellites get the energy necessary for the 'down-leg' by means of solar panels which convert the light from the sun into electric energy.

It should also be mentioned that there are two main alternatives for a possible Nordic programme exchange. One consists of a total exchange of all the existing radio and TV programmes (which would give all inhabitants in the Nordic area the possibility of receiving seven TV channels and 12 radio channels). The other alternative implies the use of one or more 'Nordic' channels, containing programmes selected from the existing national TV channels.

The Main Fields of International Law
International law governing the establishment and operation of DBS systems falls into three categories.

(1) Provisions of a purely *technical* character, embodied in the International Telecommunication Convention and certain other international instruments.

(2) International instruments which are based on *political* considerations and which have, directly or indirectly, an importance for international DBS systems (e.g. the rules of 'space law').

(3) International instruments on *copyright*.

Legal instruments based on technical considerations
Most of the countries of the world are members of the International Telecommunication Union, which

has its headquarters in Geneva. This Union is composed of States Parties to the International Telecommunication Convention adopted in Malaga-Torremolinos in 1973. To this convention are linked regulations; namely, the Telegraph Regulations, the Telephone Regulations, the Radio Regulations and the Additional Radio Regulations. To the regulations are attached certain resolutions, recommendations and opinions. These rules form a very important legal framework for the establishment and operation of DBS systems. For that reason a short outline should be given of the most significant provisions.

The International Telecommunication Convention has as its aim the securing of the best and most efficient use of the radio spectrum, which is a limited facility. The convention consists of two main parts. The first one is entitled 'Basic Provisions' and the second one 'General Regulations'. The latter part consists merely of administrative provisions on, for instance, the functioning of the ITU and the organisation of its work in conferences and consultative committees. The first part is the important one in this context, because it contains substantive provisions on the establishment and operation of DBS systems.

The basis for these operational parts of the provisions is embodied in article 4 of the convention describing the purposes of the union. These purposes are, inter alia, to maintain and extend international co-operation for the improvement and rational use of telecommunications of all kinds and, in particular – and this is important in the DBS context – to effect the allocation of the radio frequency spectrum and registration of radio frequency assignments, and to co-ordinate effects to eliminate harmful interference between radio stations of different countries.

This provision forms the basis for the frequency planning which is necessary to avoid anarchy in the field of telecommunications. Radio frequencies are a limited resource and planning is necessary to give countries equal opportunities to make use of telecommunications. The ITU's Plenipotentiary Conference determines the general policies for fulfilling the purposes indicated in article 4. The specific work in determining frequency plans, etc., is done in administrative conferences. These conferences can be world or regional ones. A very important such Administrative Conference was the 1977 World Administrative Radio Conference in Geneva (the 1977 WARC). The practical implementation of the frequency plans is made by the International Frequency Registration Board (IFRB) which is a permanent 10-member organ appointed by the Plenipotentiary Board. This general legal basis is valid for all forms of radiocommunications.

As regards space radiocommunications a very important step was taken by the World Administrative Radio Conference for Space Telecommunications in Geneva 1971. This conference adopted a resolution, Spa 2-2/1, relating to the establishment of agreements, etc., for DBS services. This resolution says that stations in such services shall be established and operated in accordance with agreements and associated plans adopted by world or regional administrative conferences in which all the administrations concerned, and all the administrations whose services are liable to be affected, may participate. The background for this resolution was the need to make the best possible use of the geostationary orbit and of the frequency bands available; the risk of harmful interference; and the fact that the great number of receiving equipment may be an obstacle to future changes of the location of space stations.

These provisions and resolutions are very important because they form the legal basis for the planning of the use of the geostationary orbit and of the frequency band. It is no longer possible to use these bands freely, or to appropriate a location in the geostationary orbit in breach of them.

There are some basic guidelines in the convention itself as regards the criteria, etc., to be used in the frequency planning and in other measures for regulating international radiocommunications and in particular of space radio and TV services. The most important one is article 33, stating that 'In using frequency bands for space radio services members shall bear in mind that radio frequencies and the geostationary satellite orbit are limited natural resources, that they must be used efficiently and economically so that countries or groups of countries may have equitable access to both in conformity with the provisions of the Radio Regulations according to their needs and the technical facilities at their disposal.' Furthermore members shall endeavour to limit the number of frequencies and the spectrum space used to the minimum essential to provide the necessary services. To that end they shall endeavour to apply the latest technical advances as soon as possible. There is also a provision (in article 35) saying that all stations, whatever their purpose, must be established and operated in such a manner as not to cause harmful interference to other radio services. The members of the ITU undertake to require its agencies to observe this provision.

These provisions of the convention are binding for the states parties to the convention and consequently put a legally binding obligation on them to use the possibilities for space radio communications in an efficient and economic way, to restrict the use of frequencies to what is

absolutely necessary and to avoid harmful interference. The Radio Regulations contain detailed provisions specifying the contents of this general obligation.

Of particular importance in this respect are the definitions of certain concepts (for instance 'harmful interference', 'radiocommunication', 'space station', 'broadcasting-satellite service', 'individual reception' and 'community reception') aiming at securing a uniform application throughout the world. Certain definitions are of a particular interest in this context.

One of these is the definition of 'broadcasting-satellite service' which means, according to Rule 84 AP of the Radio Regulations, a radiocommunication service in which signals transmitted or retransmitted by space stations are intended for direct reception by the general public. The term 'direct reception' encompasses, according to Rule 84 AP.1, both individual reception and community reception. In Rule 84 APA 'individual reception' is defined as the 'reception of emissions from a space station by simple domestic installations and in particular those possessing small antennae. 'Community reception' means, according to Rule 84 APB, 'the reception of emissions from a space station in the broadcasting-satellite service by receiving equipment which in some cases may be complex and have antennae larger than those used for individual reception, and intended for use by a group of the general public at one location or through a distribution system covering a limited area.'

The definitions in the Radio Regulations have a further significance in certain other respects. The first one is that the definitions are binding for the States but are so only in the context of ITU. *De facto* they have, however, an importance outside the ITU; for instance by influencing the efforts to define certain matters in national legislation and in international conventions in other fields (the European TV agreement, the Brussels satellites convention and the Rome convention for the protection of performing artists). The reason for this influence is that these definitions are the only existing interpretation of certain concepts which are internationally acknowledged and precise.

Another fact should be mentioned in this context. In the northern part of the Nordic countries the radiation from a satellite would be so weak that it would be difficult to obtain a good reception. Besides, in houses and villages in the north of the mountains in certain parts of Norway and Sweden, the reception will be difficult or non-existent. In these cases the radiation from the satellite will be received and re-transmitted by means of smaller or larger cable distribution systems. This fact does not, however, deprive the system of its character of a direct broadcasting-system by definition because the beams are – just as is said in the definition – 'intended' for reception by the general public. If this interpretation of the concept of 'direct reception' is not accepted DBS broadcasting would not be possible in the northern or the southern parts of the earth.

There are some other provisions in the Radio Regulations which have a particular impact on satellite broadcasting. One is the much-discussed Rule 428 A on spill-over, which states that 'In devising the characteristics of a space station in the broadcasting-satellite service, all technical means available shall be used to reduce, to the maximum extent practicable, the radiation over the territory of other countries unless an agreement has been previously reached with such countries.'

As regards space radiocommunications the situation is, from a technical point of view, more complex than in the case of terrestrial radiocommunications. There are some specific technical factors which must be taken into account and which necessitate very complex frequency planning.

In principle the Radio Regulations provide for the use of broadcast satellites in six frequency bands. These bands are the only ones which could be used for such purposes at the present state of art. The two lowest of these bands (700 MHz to 2,600 MHz) can, for reasons such as power limits and the sharing of frequencies with other communications services, not be used for DBS services. The three highest frequency bands (42 and 85 GHz and, in some regions, 23 GHz) consist of very high frequency wavelengths which can penetrate rain only with difficulty and are not used for DBS services at present. What remains is the sixth band, the so-called 12 GHz-band which actually consists of 11.7-12.5 GHz in Region 1 and 11.7-12.2 GHz in Regions 2 and 3 (Region 1 being Eastern and Western Europe and Africa; Region 2 being the Americas; and Region 3 being Asia). It is the 12 GHz-band which offers the greatest possibility for DBS broadcasting at the present state of technology. It does, however, have certain restrictions.

In Region 1 this band is also allocated to the 'fixed' and 'mobile' services and to the terrestrial broadcasting services. In particular in Europe there is an urgent need to use the 12 GHz band for further fixed and mobile services and for terrestrial broadcasting services. Such a development could jeopardise the future development of DBS services. A World Administrative Radio Conference (the 1977 WARC) was therefore held to produce a plan for the 12 GHz band.

The 1977 WARC was held on the basis of certain earlier decisions within the ITU. The World

Administrative Radio Conference for Space Telecommunications in 1971, among other things, had established a definition of the concept of 'direct broadcasting service', allocated suitable frequency bands, established the principle of equal rights to the use of these bands and adopted resolution Spa 2-2.1 which stated that stations in the broadcasting-satellite service should be established and operated in accordance with agreements and associated plans adopted by competent world or regional conferences of the union.

As regards the European broadcasting area (ie, Region 1) technical studies have shown that it is necessary to use eight channels for each TV programme. As the bandwidth available in Region 1 can be divided into 40 channels (24 in Region 3) each country consequently can obtain a service of five TV channels.

The coverage of a certain country will inevitably result in an overspill of the radiation of the beam to the adjacent countries. It is almost impossible to form the beam in such a way as to follow exactly the frontiers of the receiving country. Furthermore there will be an area outside the service area in which the emissions can be received by means of somewhat larger antennae and outside this 'extended' coverage area there is an area in which the radiation is not strong enough to be received but will interfere with other signals. For these reasons it is necessary to allocate frequencies for the different countries in such a way as to disturb adjacent countries or interfere with its emissions as little as possible. In this context certain technical factors can be taken into account. Firstly one could choose different polarisations ('horizontal' or 'vertical') for adjacent countries. Secondly the satellites for adjacent countries could be placed in different orbital positions so that people who wanted to receive the emissions intended for another country would have to direct their antenna at the orbital position of the other country's satellite. Thirdly the channels assigned to adjacent countries could be located in different parts of the frequency band.

It is thus a complicated matter to assign the limited number of frequencies. This assignment should furthermore be made in full compatibility with Rule 428 A of the Radio Regulations according to which the coverage of a foreign country should be minimised as far as possible.

The Final Acts of the 1977 WARC contain a plan of the frequency assignments for the broadcasting satellite service in Regions 1 and 3. The acts entered into force on 1st January, 1979. They are destined to form an integral part of the Radio Regulations. The World Administrative Radio Conference of 1979 is given the specific task of integrating the Final Acts into the Radio Regulations.

The 1977 WARC can thus be said to be legally binding for all Member States. The 1977 WARC also decided that a regional conference should be convened not later than 1982 for a corresponding frequency planning in Region 2. Awaiting that plan, the use of the 12 GHz band is there governed by Rule 405 C of the Radio Regulations which implies that such use may take place only for national services.

The WARC plan of 1977 comprises mainly assignments of frequencies, etc., for national DBS systems. For international broadcasting it is necessary to use beams which are wider than those intended for purely national purposes. Such international broadcasting would consequently reduce the number of channels available to other countries. This is why it is possible to allow such international broadcasting only in a limited number of cases. In the 1977 Plan nine ITU members are given such possibilities; Denmark, Finland, Iceland, Norway, Sweden, Syria, Tunisia, Saudi Arabia and the Vatican City. The four Nordic countries of Denmark, Finland, Norway and Sweden were allotted three national frequencies each as well as two frequencies for a common Nordic 'superbeam' to cover their entire territories. Iceland was allotted five national frequencies, to be used together with Denmark for the coverage of Iceland, Greenland and the Faroe Islands. Iceland was also allotted five national frequencies from a satellite in another position in the geostationary orbit (the western satellite position).

The position of the satellite for the Scandinavian mainland is 5^{o} East, approximately over the territory of São Thomé off the west coast of Africa. The western satellite position is 31^{o} West, over the high seas.

From a practical point of view what has been said implies that Denmark, Finland, Norway and Sweden will have 11 TV channels (3 national, and 4 x 2 'international'). Iceland will have five national channels from the western satellite and certain channels from the frequencies which it has been assigned together with Denmark.

The legal framework for these assignments for supranational coverage is to be found in Rule 428 A in the Radio Regulations according to which coverage of the territory of other states beyond what is technically inevitable is allowed if these states have given their consent. It should be stressed that the 1977 plan is binding and that supranational broadcasting is possible only in the case of the nine

states just mentioned. It would be a breach of the plan to use without consent the orbital position or the frequency of another country for broadcasting to that country.

As a summary of what has been said it should be stressed that the telecommunication convention, its Radio Regulations and the 1977 WARC constitute the legal framework which from a purely technical point of view governs Nordsat. There exist, by a special arrangement made at the 1977 WARC, frequency assignments for this international DBS system. The spill-over should create no problems according to these provisions because the spill-over is reduced in accordance with Rule 428 A and, furthermore, adjacent states have agreed to the plan and thus have given their consent to these supranational beams and their spill-over.

Legal instruments based on political considerations

As regards international broadcasting by means of DBS there is another very important bulk of international law to be taken into account, consisting of treaties and other international instruments which are based on essentially political considerations. Space law could be defined as the provisions – codified or not – which govern the use of outer space. Space law developed within the United Nations in the 1950s and the early 1960s. The General Assembly has adopted two important resolutions (1972, XVI and 1802, XVII) and in 1963 agreed a declaration of legal principles for the use of outer space. This part of the work was later codified in the main document of space law, the 1967 Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space including the Moon and other Celestial Bodies (the Outer Space Treaty). This treaty contains principles of a general nature concerning the use of outer space and is applicable to all kinds of use of outer space, including the use of DBS.

Article 1 of the treaty recognizes that outer space shall be free for use by all states. In Article 2 it is furthermore stressed that outer space is not subject to national appropriation. These two articles imply that outer space is free for use and that states do not have to seek permission from other states or from any international organization in order to put DBS satellites into orbit. Article 3 stresses that use of outer space shall be carried out in accordance with international law, including the Charter of the United Nations, in the interest of maintaining international peace and security and promoting international co-operation and understanding. Article 6 contains a provision of fundamental importance to DBS activities. It is said that states parties to the treaty shall bear an international responsibility for national activities in outer space whether such activities are carried on by governmental agencies or by non-governmental entities. The states furthermore are responsible for assuring that national activities are carried out in conformity with the provisions set forth in the present treaty. Activities by non-governmental entities shall require authorisation and continuing supervision by the states concerned. The provisions of article 6 are in the first place applicable to the *establishment* and the *maintenance* of a satellite system. A totally different problem is if the article is applicable also to the *operation* of such a system and, in particular, to its transmissions of programme from one country to another.

Article 8 contains provisions saying that the state on whose register a space object is carried retains jurisdiction and control over such an object. It is furthermore stated that the ownership of objects launched into outer space is not affected by their presence in outer space. This provision does not imply that a DBS is part of the territory of the launching state, but it does entail certain rights similar to those following from sovereignty over a territory. What is important in respect of satellites is the repercussion on the question of where a direct satellite broadcast emission begins. The starting point could be either the 'up-leg' or the 'down-leg'. If the starting point is the 'down-leg' it means that the broadcast emission starts in the satellite. In some legislations the question whether or not a certain broadcast is protected depends on where the emission begins (the criterion of territoriality). In these cases the consequences of article 8 could be significant for the protection of the broadcasts and their contents.

The application of space law raises its own problems. In principle, space law is applicable only in outer space, which is 'free for use by all states', and not in the atmosphere, which is generally considered to be within the ambit of state sovereignty. However, there is no established borderline between outer space and the atmosphere. This question did not have any particular significance until a relatively short time ago when satellite systems created a major problem. Different solutions have been proposed. In no cases, however, have the proposed limits been established at such an altitude as to put the geostationary orbit (at 36,000 km) into the sovereignty of states.

There are in principle two possible approaches. One is to draw the borderline at a certain height above the surface of the Earth. The other is to relate the definition to the activity in question. This latter approach is adopted in the ITU's Radio Regulations. So a 'space station' is defined as a 'station located on an object which is beyond, is intended to go beyond, or has been beyond, the major portion of the Earth's atmosphere'.

Beginning with the Bogotá declaration in 1976, and continuing with a declaration at the 1977 WARC and declarations in the United Nations and its Outer Space Committee, some equatorial states, in particular Colombia and Ecuador, have claimed sovereignty over the part of the geostationary orbit that lies over their territories. One of the reasons behind these claims is the fear that space powers will appropriate all the satellite positions in the orbit in accordance with the principle of 'first come, first served.' Their claims have not won any great support; at least, not from the space powers. It is furthermore not clear at the moment what the exact practical implications of the claims would be. As regards the Nordic satellite project, the solution of these questions could have some significance. One of the satellites will probably be located at 5° East, approximately over the territory of São Thomé, which belongs to Portugal.

The UNESCO Declaration

The UNESCO General Assembly adopted in 1972 a 'Declaration of guiding principles on the use of satellite broadcasting for the free flow of information, the spread of education and greater cultural exchange'. The declaration contains fairly detailed principles for the use of direct broadcasting satellites although, unlike the Outer Space Treaty, it is not binding on states.

Article 1 says that the development of satellite broadcasting should be guided by the principles and rules of international law; in particular, the Charter of the United Nations and the Outer Space Treaty. Several articles stress in particular the respect for the sovereignty and equality of all states, the apolitical and non-discriminatory character of satellite broadcasting and the need of international cooperation.

Articles V-VII define the three main objectives of satellite broadcasting; the free flow of information; the spread of education; and the promotion of cultural exchange. Broadcasters and their national, regional and international associations should, according to article VIII, be encouraged to cooperate in the production and exchange of programmes and in all other aspects of satellite broadcasting.

In article IX the declaration touches upon an item which has been much discussed in the Outer Space Committee. This article contains certain statements on the question of 'prior consent.' It is said that in order to further the objectives set out in the preceding articles it is necessary that states, taking into account the principle of freedom of information, reach or promote prior agreements concerning direct satellite broadcasting to the population of countries other than the country of origin of the transmission.

Since 1967, in parallel to the UNESCO discussions, the United Nations and its Outer Space Committee have been trying to formulate legal principles for the use of DBS. The committee intends these principles to be adopted by the General Assembly and incorporated in a treaty like the Outer Space Treaty. It should be stressed, however, that the content of the principles does not yet form part of international law, neither in its strict sense or in a somewhat wider sense. On the other hand, some or all of the principles could be incorporated in a resolution by the General Assembly or, as regards the agreed ones, de facto respected by states. Somewhere in such a process the contents of the principles would be said to form part of international law in its wider sense.

Finally, international DBS has to be carried on in accordance with various instruments concerning human rights and cooperation between states. This aspect is stressed both in the preamble to the UNESCO Declaration and in the draft principles for the use of DBS. The most important instruments, etc, in this context are:

- the Charter of the United Nations.
- the Universal Declaration on Human Rights.
- the International Convenant on Civil and Political Rights.
- the European Convention on Human Rights.
- the Final Act of the Conference on Safety and Cooperation in Europe (Helsinki, 1975).
- the Convention on International Liability for Damages Caused by Space Objects.
- the International Convention relating to the use of broadcasting in the interests of peace.
- the International Convention on the registration of objects launched into outer space.
- the Declaration of the Principles of International Cultural Cooperation, adopted by the General Conference of UNESCO at its fourteenth session.
- the United Nations General Assembly Resolution 110, C (II) of 3 November 1947 condemning propaganda designed or likely to encourage any threat to the peace, breach of the peace or act of aggression (according to the preamble to the Outer Space Treaty, this resolution is applicable in outer space).
- the General Assembly Resolution 1721 D (XVL) of 20 December 1961 declaring that communication by means of satellites should be available as soon as practicable on a global and non-discriminatory basis.

– the General Assembly Resolution 2773 (XXV) of 16 December 1970, recommending that states, regional and international organisations, including broadcasting associations, should promote and encourage international cooperation at regional and other levels in order to allow all participating parties to share in the establishment and operation of regional satellite broadcasting services.

These instruments cannot be discussed in detail here. An example of their possible impact is the Final Act of Helsinki. The balance elaborated in Basket III between the free flow of information and state sovereignty concerns the same problem as the Outer Space Committee mentions in connection with the draft principles on DBS.

International instruments on copyright

A third and very important part of international law on DBS concerns the international conventions in the field of copyright and neighbouring rights. These conventions aim at giving authors and performing artists a good international protection against the use of their work, etc, without their consent.

Most states are parties to the copyright conventions: either to the Berne Convention or to the Universal Copyright Convention, or to both. About 20 states are also parties to the Rome Convention for the protection of performing artists. There are also some conventions of a more regional character: for instance, the European Agreement on the Protection of Television Broadcasting.

The protection granted to the authors by the copyright conventions covers the distribution of their works by means of DBS. Some technical problems can arise, however, due to the fact that the copyright conventions were elaborated long before DBS techniques were even imagined. Direct satellite broadcasting to foreign countries may take place without anyone in that country being responsible for the broadcasts. Furthermore, the transmissions often spill over to other countries to audiences for which the broadcasts are not intended. These facts could be taken into account in the conclusion of contracts on DBS transmissions and are consequently of a practical nature. Several other matters, however, could create more significant difficulties. One of these concerns the relations between international DBS and the strictly national compulsory licences for broadcasting purposes provided for in article 11 bis of the Berne Convention.

The differences between the levels of protection in this field will certainly create problems in international DBS. For instance, there is no single worldwide agreement; only a few states are party to the Rome Convention. Another problem lies in the fact that some countries grant protection not according to the nationality of the beneficiary but according to where the performance, etc, has taken place. This principle could result in situations where there will simply be no protection at all: for instance, if the ground station is shared by many countries and is situated in a country not party to the convention in question. These problems are being studied within the Council of Europe, in connection with the revision of the European TV Agreement, and in other bodies.

4. Communications and Community

The relationship between communication and community is being closely studied in both developing and industrialised societies, by people in many different disciplines. Although the circumstances may be very different in different countries (and even within the same country) many of the notions of community development can be usefully discussed by people working in very different areas. These three papers deal with community communications as a tool of development.

RURAL COMMUNITIES IN DEVELOPING COUNTRIES: THE PROSPECTS OF COMMUNICATION

Luis Ramiro Beltran

The Universal Underdog

Most people in developing countries live in rural communities. And the great majority of these rural people occupy the bottom of the social structure and are the most afflicted by under-development. Peasants rank lowest according to every possible development indicator. They lack land of their own, earn meagre incomes, are plagued by chronic malnutrition and diseases, deprived of access to education and communication, and kept outside political decision-making. Most are forced to struggle even to survive.

There is nothing accidental or inexplicable about this situation. It is clearly the direct product of the ways in which societies are structured in the countries that are kindly but perhaps inaccurately called 'developing'. With very rare exceptions, these societies are essentially built around the interests of urban minorities, which usually derive the power to secure privileges precisely by dominating the peasantry to a degree that resembles slavery.

The Concentration of Power

Many of these countries earn their livelihood from agriculture. Their chief possibilities for development are the greater production of food and fibres for internal requirements and for export to get foreign currency. The ownership of land is crucial to this primitive economy, as the ruling minorities know only too well. They monopolise land ownership to an extent that endows them with sufficient financial, cultural and political power not only to dominate agriculture activity – indeed, all rural life – but also to exert an hegemonic influence over their countries' total existence.

Typically, a small number of farmers own the largest and best areas of cultivatable land, while the majority of peasants are condemned to be landless peons or owners of only the smallest and worst land. The peasants also have minimal or no access to farm credit or insurance and must see much of their earnings swallowed by intermediaries who fit neatly within the overall scheme of domination that has been called 'internal colonialism'.

And yet, in spite of everything working against them, they manage not only to survive but to make possible the survival – and progress – of their urban compatriots. Indeed, as research has verified in several developing countries, subsistence peasants often produce more per unit of agricultural land than the large commercial farmers, in spite of the latter's monopoly of land ownership, the advanced technologies, credit, insurance and marketing facilities. Yet the supply of land is obviously not inexhaustible, while the population – especially in rural areas – increases at hardly controllable rates. Many peasants are forced to migrate to the cities which, however, can absorb them no more easily than the countryside.

The Myth of Land Reform

For half a century, the equitable redistribution of land has been universally proposed as a basic structural remedy to these problems. But very few land reforms have actually been implemented, in the developing countries, to any significant extent. Instead, partial remedies have been tried, such as promoting small farmer cooperatives and 'expanding the agricultural frontier' by settling peasants in new territories. These measures have some virtues, but they avoid the main issue, the concentration of land in which the monopoly of power is rooted.

Technology Without Justice

More recently, the technological modernisation of agriculture has been put forward as a solution. No one would deny the importance of innovation in agricultural practice, but the remedy may prove worse than the illness if considerations of social justice are ignored. Experience shows that technological innovation that is not accompanied by structural transformation in the direction of egalitarianism may worsen the peasant's situation. It has also shown that the irrational modernisation of land cultivation based on technologies that are not labour-intensive – may increase the already high levels of rural unemployment and underemployment. And both factors could dangerously exacerbate social unrest.

The Green Revolution is the clearest illustration of this point. Years of highly meritorious scientific efforts in Mexico culminated recently in some 'miracle seeds' of corn. They well deserved the name, as they yielded levels of production never imagined before. But who profited? Only a few and mighty farmers, who collected the windfall earnings of this feat of technology and refused to share them with their labourers. The same thing has happened in Asia, with wheat and rice. In one country there was such an upheaval that some feared the Green Revolution might become the 'Red' revolution. The former president of the International Agricultural Council has said that if the Green Revolution is not linked to measures of social reorganisation and economic redistribution it might only widen the gap between the rich and the poor. And he asked the crucial question: 'Is it a cornucopia, or a Pandora's box?'.

The Newest Panacea?

'Integrated rural development' seems to be the newest remedy in vogue. It is based on the notion that the development of rural society should not be seen only in terms of increased agricultural productivity and improved marketing mechanisms, but also in terms of progress in solving the problems of nutrition, health and education that hinder such modernisation efforts. An integrated strategy implies inter-agency coordination, and some measure of centralised planning. Will this rescue the peasants from their predicament? Perhaps not, if, as seems to be the case in some countries of Latin America, integrated rural development turns out to be just another device for delaying or obstructing structural change through land reform. Not that land reform by itself can account for rural development, but that, without it, no true solution appears to be viable. Far from being just a matter of economy and technology, rural development appears to be fundamentally a political question.

The "Dorian Gray" Peasant

The way out probably lies in facilitating the peasants' transition from being enslaved minors to being emancipated human beings, from being victims of an under-development that is imposed upon them to protagonists in a genuine development. It may well be that, if justice was granted to them, they would not need anyone's help to attain a dignified and enjoyable existence.

For peasants are not what vested interests – and, reflecting them, the media – would have us believe. They build an image of the peasant as a backward, lazy and ignorant person who irrationally opposes modernisation. He is supposed to be uncreative, recalcitrant, distrustful of innovations, unwilling to save, invest and risk. He is supposed to lack any future orientation, or motivation to achieve and succeed, or entrepreneurial ability.

Can a man who collects some $15 a month for working 10 hours a day in the fields really be accused of not being inclined to save? Can a man for whom there are no schools be condemned for being uneducated? Can a man who is hungry and ill, who does not even have drinkable water or electricity in his hut, be expected to be 'risk-taking' and 'innovative'? Can a human being who is barely able to survive each day be criticised for not being 'future-orientated'? Can a person who is exploited and often oppressed be expected to have high levels of 'achievement motivation' and creativity, and to strive to become an entrepreneur?

Even if the peasant was indeed such a monster of under-development as the elite's image might suggest, should he be blamed, or should the blame go to the society that makes him so? Does it make any sense that the system forces him into a virtual cage and then blames him for being an impotent prisoner?

It is within such an archaic and unfair pattern of social relationships that 'communication for rural development' has to be appraised. For communication is neither independent of the determinant societal structure nor can it be deemed a magician capable of changing that structure by itself alone.

Agricultural Extension . . . For Whom?

Many developing countries began substantive efforts to use communication for rural development as much as 25 years ago. Agricultural extension services, patterned after the successful post-war experience of the USA, were set up through land grant colleges. These imported services were essentially systems of interpersonal communication between agricultural experts and the farmers in their vicinity. The experts wanted to transfer technological innovations. They contacted the farmers on an individual basis (by visits to farm and home) and in groups, aided sometimes by the promotion of demonstration areas, and exhibits in fairs. They were expected to use radio and pamphlets and other mass media whenever possible.

For all the good intentions, the strategy did not prove very successful. There were several reasons: two major ones. Limits of time, distance and costs prevented the extension agents from reaching directly more than a few farmers. They tended to favour those who had more land and money, and the inclination to put into practice what had been recommended. They tended to concentrate their

energies on rural elites; which is to say that they served most those who least needed it, and least those who needed it most. Secondly, the experts' urban origins and highly academic training prevented many from establishing effective communications with the rural dwellers. As for mass communication, very few extension services were ever seen to use it significantly.

Not in the Market, Not in the Audience

In most developing countries, the mass media reach the rural masses only tangentially, if at all. Physical handicaps, such as the countryside's lack of roads and electricity, partly account for the discrimination. There are also the self-evident economic causes such as the impossibility of the peasants buying communication equipment or even copies of newspapers. Anyway, illiteracy inhibits more than the minimal penetration of print media. But research strongly suggests that in many cases the main reason is the shortage of content that might interest the peasantry. Media operations are for the most part financed by advertising and are primarily addressed to the urban population, not the rural population, which is too poor to buy what is advertised. Even when rural inhibitants do read newspapers, they will find almost nothing about the peasants' lives, problems and ambitions. Paradoxically, this bias appears even in media that specialises in agriculture, which are for the most part written in a language and on such topics that interest only the few rich farmers who own a great deal of land (but, in many cases, who do not even reside in the countryside) and who can buy the products that are advertised. The point is that people who are not in the market are not regarded as part of the audience.

So far, then, the private and commercial mass media cannot be regarded as useful tools of rural development communication for the peasantry. A relative exception is radio which is the one channel that does reach the rural population. Radio is essentially organised around music, entertainment and sports programmes, but does carry some agricultural programmes, either supported by government agencies or produced by private firms or individuals.

Many state agricultural agencies and several commercial farms produce substantial amounts of agricultural booklets, and some visual materials (posters, slides and even films). In fact, several of them produce too much printed stuff, considering the high levels of illiteracy.

With very few exceptions, these publications are exclusively addressed to farmers who are highly educated and well-to-do. The covers, texts and drawings tend for the most part to be couched in terms compatible only with a high level of urban culture. Research has demonstrated that many of these publications neither reflect the interests of the peasants nor serve the priorities established in the national agricultural development plans. Thus government communication activity cannot really be rated as an appropriate instrument for rural development communication.

Is there anyone doing anything in communication that can be deemed useful for the peasantry? Fortunately, yes. But the real and full impact of it remains to be seen. Systematic and reliable assessment is still to be done.

A Big Hope: Special Radio Formats

Radio has consistently been a favourite of rural development communicators. A number of countries in Asia, Latin America and Africa are carrying out significant, innovative and promising experiments. Among the oldest and most famous are the Radio Forums and Radiophonic Schools, which involve group listening and discussions under the guidance of trained monitors and with the aid of printed and visual materials. These strategies are based on programmes specifically addressed – in content and in code – to the peasantry, and have earned high levels of acceptance.

The chief experiments with Radio Forums have taken place in India and Ghana; essentially under government inspirations. Radiophonic Schools were born in Colombia, mostly under private non-profit initiatives inspired by the Catholic Church, and have spread throughout Latin America. The forums appear to have waned, while the latter remain active and growing.

With extremely few exceptions both have concentrated on the pragmatic education of the adult rural masses. They have avoided programmes and messages that, by fostering social transformation and peasant emancipation, might run them into political trouble. Other attempts at combining radio with filmstrips, slides and audio-cassettes are being employed imaginatively in Guatemala, Brazil and other countries for non-formal education.

Towards Horizontal Communication

Television and feature films are too expensive and complex to produce to have been much use in the service of rural development, although attempts have been made in Asia and Latin America. Long ago, and for a while, Puerto Rico excelled in film; more recently, some experiments have been conducted

in Peru in taking television to the peasants by means of mobile videocassette units. The most important and unusual feature of this latter experience – and of a comparable one with Rural Radio-Cassette Forums in Uruguay – is their intention of democratising communication. They do not treat the peasant as a passive and subordinate receiver of messages but as a discriminating and participating unit, an autonomous producer of messages, all in an atmosphere of creative dialogue.

Other formats have been tried in one developing country or another: circular letters, loudspeakers, educational community theatre, puppetry, etc. And some people are preparing printed material that will not be trivial or alienating; examples include educational comic books, picture-story magazines and even small rural community newspapers.

Most of the experiments mentioned here are modest in scope and unsure of their impact. Yet they represent the first courageous attempts to help overcome the problem I have described. They deserve attention, respect and encouragement.

MODERNISATION, COMMUNICATION AND COMMUNITY DEVELOPMENT

Majid Tehranian

Human communication is predicated upon the existence of an epistemic community based on shared experiences and common structures of meaning. Closed and traditional societies provided an historical setting in which a high level of integration was made possible by the limits they imposed on human experiences and explorations in meaning. As the only form of human interaction, face-to-face communication by word of mouth provided further limits to the propagation of new ideas. Social solidarity in traditional societies was thus often based on dogmatic belief-systems and a corporate identity.

The processes of modernisation, however, tear part the solidarity of traditional societies at several different levels. First, modernisation brings about a transition from *particularistic* to *universalist* values. Contact with the outside world and its contradictory values shakes up the traditional society into a sense of historical consciousness that challenges its parochial views. One's own experiences have to be increasingly measured against the experiences of others in order to arrive at more universal interpretations.

Second, social relations are also increasingly changed from *ascription* to *achievement*. The organic solidarity of the traditional system, based on a hierarchy of blood relations, is nibbled away by the competitive spirit of the modern society. Notions of honour, based on social hierarchical codes of behaviour, are increasingly challenged by notions of integrity derived from the individual's struggle to underwrite at once his self-respect and self-advancement. Third, the processes of modernisation also undermine the *corporate* structure of the traditional society to replace it with *pluralistic* structures and identities. In modern societies, the individual belongs not to one but many communities. He experiences a complex variety of social worlds and faces a staggering diversity of choices in schooling, housing, career opportunities, social worlds and professional associations. Thus, he experiences a dichotomisation of his personality into private and public selves. In response to rapid environmental change, his public self or image has to change much faster than his private self can. This fundamental source of much inner anxiety is characterised by what Alvin Toffler has called 'the future shock'.

And, finally, modernisation has produced a *secular* culture that has few of the safety valves of the *religious* cultures of the traditional societies. The certainty of belief in an after-life is replaced by the anxieties of the awareness of death and finitude. The acceptance of religious dogmas gives way to the burdens of freedom and choice. The sense of solidarity and identity with a community of religious brethren is undermined by the anonymity of the individual in the more abstractly defined communities – the nation, the party, the factory, the corporation, etc.

For all these reasons, the transition to a modern industrial society has in the experience of most nations been accompanied by a loss of community. The faster the rate of transition, the greater has been the sense of loss. In developing countries, however, modern means of mass communication have provided a vast range of new possibilities for nation-building and community organisation. They have also provided governments with multitudinous means of access to what used to be the sacred domain of the traditional nexus of community relations (the tribe, the extended family, the mosque, the bazaar, the guild, etc.). This traditional nexus is being undermined by the social and economic processes of differentiation into new class, professional, and voluntary associations. It is also threatened by political and ideological attempts at national integration orchestrated through the mass media.

But the new communications technologies provide a double-edged sword. On the one hand, they seem to be useful vehicles for the propagation of a national culture, language, and ideology. But on the other, because of their weak linkages with traditional and nascent communication institutions, they produce a sense of alienation unparalleled in the historical experience of Western countries. Although in the West the modern institutions of social communication (political parties, professional societies, voluntary associations, local community organisations) have emerged alongside the development of modern technologies of communication (print, the electronic media, the computer, etc.), there is a communication lag in the Third World which calls for urgent attention.

Distantiation in communication, achieved through the technology of mass media as well as the new forms of information storage and retrieval, has exacerbated the centre-periphery relations at several different levels. The dichotomisation of mass and elite, urban and rural, religious and secular cultures has in some countries virtually led to the emergence of two nations with dualistic communication systems. The new technologies have given governments enormous powers of control and manipulation without providing to the public commensurate powers of resistance. Mass communication, a contradiction in terms, has often assumed a shapeless and maleable mass as its audience and object of manipulation. Where modern institutions of voluntary association and public communication are weak, talking at people rather than to people through the media has become the order of the day. Where bureaucratic control is assisted by the modern means of information gathering, storage and retrieval without alternative means of challenging the bureaucratic decisions, the public is often subjected to decisions over its life without having an opportunity to express its views. Monopoly access to sources of information has given the bureaucracies of most developing countries a cognitive arrogance unparalleled elsewhere. Decisions are made without the cognitive participation of those affected by them.

At the level of social communications, modernisation has taken a set of tolls which we may identify as the bureaucratisation and impersonalisation of human relations. The economic and social processes of modernisation have very often meant the dissolution of the small rural and tribal communities in which the individual belonged to a corporate entity giving him full support and receiving from him full loyalty. The increasing levels of geographic, social (both vertical and horizontal), and psychic mobility have given rise to serious social and psychological dislocations. In the Third World, where these processes have been compressed within a shorter period of time, they have also given rise to the so-called 'revolutions of rising expectations and frustrations'.

In the political sphere, this has spelled out vicious circles of aggression in response to frustration, and repression in response to aggression. But the longer-run processes of bureaucratisation (ie, the rationalisation and legalisation of social structures and functions) have produced an increasing impersonalisation of social relations. The separation of home from office, the dichotomisation of public and private selves, the identification of the individual with his 'social role', and the manipulation of those roles by media and public relations gimmicks, have produced a set of repressions (in the Freudian sense) characterised by anonymity and the incomprehensibility of bureaucratic life. This in turn has resulted in anomic patterns of interaction manifested in the nihilism and spontaneous violence of mass behaviour and cynicism and opportunism of elite behaviour.

At the level of interpersonal communication, however, modernisation has released enormous energies and possibilities. The rise to historical self-consciousness of untold masses of people, the processes of individuation resulting from mobility and education (both formal and informal), and the pluralisation of life-worlds based on the diversity of ethnic, racial and epistemic communities each have set forces against the processes of standardisation and bureaucratisation. But, ironically enough, they have also generated threats to the established society, which has responded in turn by the tightening of the bureaucratic controls. The ideology of mass control has often expressed itself in terms of new abstractions of collective identities (the Aryan race, the proletariat, the nation, etc.). In social relations, the new ideologies have reduced interpersonal relations to standardised patterns. In economic relations, they have reduced them to sub-human processes of routinised reproduction of alienated objects to be maximised for the sake of 'economic progress', 'national glory', 'racial purity' or 'class hegemony'. Requirements for mass conformity have thus come into direct conflict with the new energies and possibilities for self-exploration, self-expression, and self-authentication created by modern means of education and communication.

What is the constructive role that communications media can play in this historical context? Nothing much without the consent of the government and the governed. But to bridge the communication gap existing on all fronts is a worthy objective which responds to the interests of conflicting parties. A decade ago, when development was thought of primarily in terms of a top-to-bottom process, development support communication was considered by some as the major responsibility of the media in the developing countries. However, in the meantime, development theories and communications policies based on those premises have been discredited. Both at the macro and the

micro levels, at the national as well as the sub-national communities, the responsibility of the media seems to lie in fostering those bonds of human affection which hold societies together in periods of great historical trials. At the risk of over-simplification, therefore, we may argue that the programming of *identity, pluralism, participation,* and *integration* are the four areas in which mass media can play a constructive role in the process of modernisation.

Man lives not by bread alone; he also lives on the stuff that dreams are made of. A modern community, at the national as well as sub-national levels, is held together through a sense of common identity and destiny, a tolerance for the plurality of which it is made, active participation by its citizens in the decision-making processes, and a measure of cultural integration that makes possible a consensus on economic and political priorities. The media can play a sensitive part in all of these areas by giving expression to national identity, supporting pluralistic values, providing access for the participation of the minority groups and the critics, and blending and integrating the old and new cultural elements. However, to accomplish this, the media would have to enjoy relative autonomy from all pressure groups (including the most formidable of them all – the government) while being accountable to all.

THE ROLE OF TELECOMMUNICATIONS IN SOCIO-ECONOMIC DEVELOPMENT

Heather Hudson

The Environment of Developing Regions

Rural Development

Developing regions and nations can be characterised by both poverty and diversity:

> Of the total 750 million poor in the developing countries, 600 million (80%), including virtually all the absolute poor, live in rural areas. Forty per cent of all people in these countries' rural areas are poor. Improving the lot of rural areas is thus central to any development effort. (Wellenius, 1978)

For these reasons, the primary focus of this paper is on the role of telecommunications in rural development. These emphases reflect current concerns with equity, decentralisation, and self-reliance. To achieve these goals, developing nations must pay greater attention to rural human development.

The Telecommunications Environment

In 1945 there were 41 million phones worldwide; by 1977 there were 360 million, an increase of nearly 900%. In 1976, of world revenues of more than $63 billion, 40% or more than $25 billion were invested in public communications services.

The great majority of the world's telephones are in North America and Europe. The capitalist countries have by far the largest share, with 80% of the world's telephones for a total population of 759 million, while the second or socialist world has 7% for a population of 1.3 billion, and the Third World has 7% for a population of 2 billion (Pitroda, 1976). There are major differences in telephone penetration not only between developing countries and developed countries, but within developing countries. In Latin America, there are less than 5 phones per 100 inhabitants, and since 63% of all phones are in three countries (Argentina, Brazil, and Mexico) the actual average for the less developed Latin American countries is even smaller (Wellenius, 1977).There were only 1.4 telephone instruments per 100 inhabitants in Africa in 1977, or 0.7 per hundred in black Africa alone. (Okundi, 1978).

The Financial Environment

International development institutions have placed a low priority on telecommunications. Financial institutions have taken the position that telecommunications should generally be self-supporting in the short-term. Loans have generally been approved only if there is a high likelihood of a healthy internal financial rate of return. In the past this requirement has limited financial support to installing and upgrading urban facilities and inter-urban trunk routes. Saunders and Warford (1978) comment that conservative estimates on the internal financial rate of return on the latest dozen telecommunications programmes which were partly financed by the World Bank show a range between 13% and 22%.

A second factor is lack of knowledge of the role of telecommunications in development. Both national planners and international agencies have considered telecommunications to be an urban luxury for wealthy businessmen and matrons. Institutions such as the World Bank and the US Agency for International Development have not been convinced that telecommunications projects would benefit the rural poor. Through December 1977, only 1.6% of the Inter-American Development Bank budget was for telecommunications projects.

Developmental Benefits of Telecommunications

Introduction

Many writers have recognised the developmental value – or indirect benefits – of telecommunications. The World Bank stated in 1971:

> 'The value of telecommunication services to users is attested by the unsatisfied demand throughout the developing world, even at prices which generate very substantial surpluses for re-investment and thus probably capture a much larger share of user benefits than in any other public service.' (World Bank, Telecommunications Sector, Working Paper, 1971).

In a more recent paper, Dickenson of the World Bank states:

> 'If trade is the lifeblood of an economy, then telecommunications can truly be regarded as the nervous system of both the economy and society.' (Dickenson, 1977).

Social Service Delivery

Several studies have indicated the value of telecommunications for delivering social services: as a means of extending the range of institutions, providing training and consultative support to local, minimally-trained field personnel (eg. health workers and teachers' aides), and improving the administration of field activities.

The ATS-1 satellite demonstration project in Alaska indicated the potential impact of telecommunications on *health* and on education. Experimentation on ATS-1, an audio-only satellite, was inaugurated in 1971 with twenty-five ground stations. Each of the twenty-five sites had a receiver/transmitter located in a readily accessible location (eg, a community hall or health aides's home), operated by a native health aide with only basic medical training. This health programme allowed for the first time reliable communications between the Public Health Service's community health clinics, staffed by health aides, and physicians at a regional hospital.

Thus, while one health aide was conferring with a doctor about a specific case, other health aides could listen and pick up pointers about the treatment of similar cases. The number of patients treated with a doctor's advice during the first year on ATS-1 more than tripled. (Hudson & Parker, 1973).

The *educational* programme of ATS-1 was essentially of two types: educational programming to schools and communities, and administrative. The educational programme had a mixed success, largely due to problems of programming and community organisation. The administrative part, however, which essentially provided reliable telephone-like communications, was very successful.

In Alaska, ATS-1 also improved rural school administration:

> In the past, generator failures, furnace blow-outs, or deficiencies in instructional materials would cause the whole school to shut down while a written message was mailed out. With the satellite radio, teaching conditions were greatly improved and teachers would call for immediate emergency parts during the critical winter months. The communications links between the schools and the area administration supported and encouraged the efficient operations of the schools. (Parker, Walter B., 1972).

The importance of telecommunications for educational administration has been recognised elsewhere. The University of the South Pacific (USP) has a regional mandate to serve the newly independent nations of the South Pacific. USP augments the facilities of its main campus in Suva, Fiji, and an agricultural college in Western Samoa, with Extension Centres in six island groups. These centres offer USP correspondence courses and local cultural and educational activities. Since 1974, USP has used NASA's ATS-1 satellite (shared with Alaska and other experimenters) to link the Fiji campus with the extension centres. USP has found the shared conference channel to be an extremely important administrative link between the centres for coordination of Extension Services activities. It is also used for tutorials for students studying by correspondence and for seminars. (Benstead, 1977).

Economic Development

The telecommunications system may allow rural populations access to price information which may promote a more efficient marketing and distribution system. The access to specialised expertise increases efficiency in production (Pierce and Jequier, 1977). In general, it is possible that access to a two-way, instantaneous transmission, telecommunications network could increase productivity of various types of economic enterprises by speeding the turn around times for ordering and production, allowing specific information inputs to be drawn upon as needed during the production process, matching production more closely to changes in market demand, and the like.

Goldschmidt (1978) reports on how improved communications affected the Vita packing plant in Unalaska, Alaska. Due to extreme congestion on the two VHF circuits feeding into Unalaska until November 1976, telephones could not be used for frequent contacts with the rest of the world. As a result, the Vita fish packing plant operated virtually as an autonomous plant. Its contacts with its Seattle headquarters were primarily historical – what was shipped, and when.

With the introduction of the satellite ground station, which virtually eliminated congestion, this condition changed. The Unalaska plant now maintains frequent contact with its Seattle headquarters (several times a day). As a result, the plant is now more responsive to customer demand, resulting in improved efficiency of the plant, better customer relations as specific orders are filled, and a shift in managerial control, making the Unalaska plant a dependent unit rather than an autonomous plant as in the past.

The International Telecommunication Union's GAS-5 manual stresses the importance of telecommunications to secondary manufacturing and to tertiary sector firms. A sector analysis of the importance of telecommunications indicated that 90% of telephone services in developing countries are used by subscribers in industry, business, banking, transportation, and government (1972, XII:9). For secondary manufacturing, telecommunications is needed to coordinate complex series of operations. The secondary sectors, however, require telecommunications less than do the tertiary (services) sector.

A study by the GAS-5 of the use of telecommunications in the US, Japan and Yugoslavia indicated that trade, finance, transport and service industries are the heaviest users of telecommunications. This importance derives from the fact that tertiary sectors cannot function on a day-to-day basis without telecommunications. Thus, it appears that telecommunications is necessary for these sectors to develop and expand.

Kaul (1978) reports on a pioneering study that examined the benefits of telecommunications through input-output analysis, using an inter-industry transaction table for 1968-69. Kaul found that intermediate consumption by industry amounted to 42.11% of total consumption of posts and telecommunications services (with private consumption 42.93% and public or government consumption 14.96%). Of the intermediate consumption, almost 95% arose from the tertiary sector, as follows:

Table 1: *Intermediate Consumption of Posts and Telecommunications Services by Tertiary Sector, India, 1968-1969.*

Trade	67.75%
Banking and Insurance	13.69%
Education and Research	9.30%
Transport	8.07%
Others	2.29%
	100.00% (Source: Kaul, 1978)

Migration

It has been suggested that telecommunications development in rural areas may help counteract the rural exodus to the towns, which is a serious problem in many developing countries. Rural telecommunications development may allow a more balanced development of a country by allowing business and government agencies to operate outside the large urban areas.

Communication Patterns

The introduction of telecommunications services in a region can alter considerably its patterns of communication. Wellenius (1978) finds that three types of phenomena take place:

- substitution for alternative means (such as transportation, mail, and telegraph);
- generation of new communication which would not have developed with telecommunications;
- new requirements on other communication (eg, transportation) as a consequence of the increase in intensity and variety of interaction.

Wellenius cites the following evidence from a study in Chile:

> . . . a survey of urban Chilean households in 1970 showed that, regarding communication among members of the family and with friends and kin, availability of the residential telephone tends to result in a partial substitution for the use of letters and telegrams by long distance telephone calls, a considerable number of telephone calls that constitute new communication events, and a net

increase in visiting frequency. On average, families with telephones had more than three times as many of these communications per unit time as those without telephone. (Wellenius, 1978).

Goldschmidt (1978) reports that improved communications have made certain forms of travel – often hazardous and expensive in the Alaskan bush – unnecessary. For example, during the construction of a village high school, construction supervisors often had to fly to the nearest town to call their suppliers. Such transportation, which is purely substitutable by communications, will be replaced when satellite ground stations become fully operational. However, improved communication will not necessarily lead to a decreased demand for rural transportation. Hudson (1974) has noted that improved communication in the Canadian Arctic led to increased travel as communications helped to promote greater economic activity.

The existence of a telecommunications system may be necessary to support the new types of organisations which occur as part of the development process. Cherry (1977) has argued that 'in the economic sphere, the telephone service is essentially organisational in function; it creates productive traffic.'

Parker (1976) has argued that telecommunications may both reflect and reinforce the social structure of a nation. Parker views institutional structures as composed of communication patterns which may be shaped by the communications technology available to society:

> The communication technology of a society determines who can speak to whom, over what distances, with what time delays, and with what possibilities for feedback or return communication. This is the heart of what is meant by social organisation. It makes less sense to say that the social organisation is caused by the pattern of communication interactions in the society than it does to define the social structure in terms of the patterns of communication (including order-giving). The culture of a society can be defined by the messages that are transmitted in these social patterns. The messages of a society are obviously shaped by the media they are transmitted through, as well as being creations of the institutional structure of society. Therefore, careful attention should be paid to the form of the communication technology installed in support of the development.

It is important to note that the existence of a telephone channel does not cause social changes, but rather allows them to proceed.

Participation In National Development

Successful efforts to provide communications services to remote regions may result in greater participation by their residents in the society.

Concerning Canada:

> The predominantly south to north communication links of the past are becoming truly two-way communication links. The voice of the northern society is being heard in the south ever more frequently and with greater clarity. (Simpson, 1978).

The native (Aleut) village of Atka, Alaska, in the Aleutian islands is extremely isolated. Prior to its receiving a satellite ground station, all communications with the outside took place via mail exchanged once a month by mail barge. Such slow communication made the application for government grants in aid virtually impossible – the turnaround time between Anchorage officials and the village was simply too long for timely application. Further, business trips from Atka to Anchorage required payments of $900 per person just for expenses, as the villagers had to spend at least one month in Anchorage to wait for the mail barge to return to Atka.

With the satellite ground station, daily transactions with the Anchorage office of the native corporation have helped generate increased government grants-in-aid programmes to Atka. The turnaround time for grant applications, including the simple act of notifying the village that grants are available, has been reduced from a minimum of one month to just a few minutes. Also, the possibility of instantaneous communications has permitted the more timely ordering of supplies, educational materials, and health goods which are shipped by the mail barge.

The increase in activity in Atka has been accompanied by a demand by the villagers for a landing strip. There is evidently sentiment within the village that travel should no longer be dependent on the mail barge.

Hudson (1974, 1977) reports that the communication system is considered important for regional development by the Indian people of northern Ontario who have cited communication as their top

priority for many years. In a region where travel is difficult and expensive, the telephone allows leaders to plan, discuss priorities, and coordinate strategies. Previously, the village chiefs had no way of coordinating their planning until they arrived at meetings with government or commercial agencies – which clearly placed the agencies at a strategic advantage.

The telephone system can be a vital tool to enable people to participate in their own development. However, it appears that certain pre-conditions must exist. There must be some level of local organisational structure, and there must be some perceived community of interest with other parts of the region or subregion. In Canada, Indian chiefs who represent their communities and share common concern about the development of their region will use communications as an organising tool regardless of their ability to speak English. But, unstructured village groups who have little awareness of common concerns with other communities are likely to use the telephone purely for social communication between family members and friends.

Quality of Life

It appears that introducing a telephone service can improve the quality of life in remote villages. For example, the existence of private line and toll circuits to Alaskan villages has allowed the continuation of the regular consultations between village health aides and medical centres initiated during the ATS-1 project. It has also allowed easier contact between village residents and medical services. For example, the amount of time women from the Aleutian islands must spend in Anchorage receiving pre- and post-natal care has been reduced from two months to one month – the women can now remain with their families longer and consult with the Anchorage Native Medical Center by telephone. (Goldschmidt, 1978).

The existence of the toll service allows continued contact among the native families which have been dispersed due to exigencies of boarding schools, employment, health, and the like. More importantly, this extended contact with families and friends provides a constant flow of information to the villages.

These findings from Alaska are supported by information developed by Inuit Tapirisat of Canada (the national Eskimo Brotherhood) in reference to a people generally below the poverty level and at least partially dependent on traditional pursuits of hunting, fishing, and trapping. Inuit Tapirisat of Canada has argued that communication in the isolated northern villages is a life and death matter.

Billing data are an indicator of the importance of phone service to the Inuit: in 1976 the average toll revenue per main station in the eastern Arctic was $400, or 2.6 times as much as for Bell Canada territory as a whole. (Inuit Tapirisat, 1978). Among Indian communities in northern Ontario, the usage is similar. In 1977 the average toll revenue per main station in these remote communities was $448; again, for people pursuing a primarily traditional lifestyle, and with very limited disposable income. (Wa-Wa-Ta, 1978).

Hypotheses on the Role of Telecommunications in Development

Telecommunications as a Public Good

While the overall findings about the relation of telecommunications and rural development are somewhat inconclusive, they all suggest one important dimension – the effects of telephone investment do not accrue to individual users, but to society in general, and rural society in particular. Although the 'good' which is sold may be defined as the individual telephone call, or as access to the telephone network, the social benefits in terms of improved health, productivity, education, and the like may accrue to those who do not directly use the telephone. As such, attempts to treat the good as a private good may lead to underinvestment or underconsumption of the public good.

An approach based on the public goods qualities of telephony would emphasise investment and price policies based on the range of public goods expected from the introduction of telephone services. Thus, economic return would be measured in terms of the range of social benefits resulting from the telephone service, similar to the ways in which the benefits of roads, water and other public utilities are measured.

The difference between an investment and pricing approach based on telephony as a public good versus telephony as a private good is significant especially in terms of rural telephony. Treating telephony as purely a commercial good necessarily leads to investment policies that favour urban areas, and leave rural areas under-served. The reasons for this are forthright – urban areas, with their high densities of population and relatively high incomes, are less expensive to serve and produce higher direct returns to capital than rural areas. However, if the criterion of public goods is used, it is possible that the benefits arising from telephone service in terms of economic and social development may justify the investment in telephone service even though the direct returns on capital will be low.

Hypotheses about the Indirect Benefits of Telecommunications

1. Telecommunication permits improved cost-effectiveness of rural social service delivery

In countries where a political and economic commitment has been made to provide rural social services (eg, health care, education, agricultural extension services), a key policy question concerns the cost-effectiveness of the alternate ways of providing the services. Locating highly or moderately trained professional or para-professional workers in rural locations may not be feasible because of the high initial training costs, the continuing salary costs and the bureaucratic overhead costs (including communication and transportation) of managing a large, geographically dispersed organisation. Even if a sufficient number of highly trained personnel were available, and budgets were sufficient to pay their salaries, it still might be very difficult to induce them to live and work in rural locations (see Hudson, 1977). If minimally-trained rural workers are utilised on either a volunteer or nominally paid basis, then the requirements of management and supervision, and of continuing education, will be greatly increased.

In the absence of a good telecommunications infrastructure, the travel and professional labour costs associated with management, supervision and continuing education may be prohibitively expensive. But without them, the programme may be significantly less effective. The consequences may be a lower quality of rural education, the unavailability of agricultural extension information to subsistence farmers, and poor or non-existent rural health care. With reliable rural telecommunications, telephony or audio conference circuits may be used to provide supervision and assistance to rural workers. Instructional radio programme, such as the 'radio mathematics' project in Nicaragua, may be delivered to rural schools, and supervised by part-trained teachers or education aides. Timely feedback from the schools to project managers may be essential to the success of such projects. Rural health workers able to consult with nurses and physicians affiliated with district hospitals or clinics may consequently be able to provide better local health care. These kinds of applications may be possible only in locations with reliable telecommunications.

The basic hypothesis is that savings in training costs, labour costs and transportation costs may make it possible for rural social service agencies to allocate significant budgets to telecommunications services. The trade-off analysis involving communications versus other costs may in fact indicate that rural programmes may be affordable only in locations where telecommunications services can be procured. In the absence of general purpose telecommunications, some rural health care programmes (eg, in Nicaragua, Canada, Guatemala, Australia) use two-way radio systems dedicated to health applications. The costs of such a dedicated communication system may be a significant fraction of the rural health care budget. Dedicated single purpose systems may be economically out of reach for many social service programmes, but such programmes may be able to afford the shared use of a general purpose telecommunication system that is supported by revenues from other social service or directly economically productive enterprises, as well as by consumer revenues.

2. Telecommunication permits improved cost-benefits for rural economic activities

The prevailing economic theory concludes that the optimal allocation of economic resources occurs when the two conditions of perfect competition and perfect information are met. In socialist economies the availability of information is even more important for the efficient allocation of resources, because the flow of money cannot constitute the same information signal that it does in a competitive economy. Rural areas that lack a telecommunications infrastructure are thus at an information disadvantage (and consequently an economic disadvantage) relative to the urban areas which have both more developed telecommunications and lower cost transportation substitutes.

In rural agriculture, the timely access to relevant information such as weather reports and prices and the availability of necessary inputs (seeds, fertiliser, tools, credit, etc.) should make rural agricultural enterprise more efficient. The timely access to technical agricultural information, such as might be provided by an agricultural extension service, may also make agriculture more efficient.

In many developing countries rural population growth has led to a surplus of labour relative to the available agricultural land. If land were all re-distributed 'equitably', the resulting plots might be too small to be economically viable. Rural-urban migration patterns are putting great pressure on urban areas with insufficient jobs and insufficient urban services and infrastructure (eg, water and sewage systems). Consequently, the development of rural non-farm enterprises may be a necessary part of national economic development plans. The availability of an under-employed rural labour force (at advantageous wage rates) for whom new urban housing need not be provided, may provide an incentive for rural enterprise, if reliable telecommunication and transportation infrastructure are available to facilitate the coordination of the necessary inputs and marketing activities.

3. Rural telecommunication permits more equitable distribution of economic benefits

Increasingly, national governments and multilateral and bilateral development programmes are insisting

on greater social equity as a development goal; including the provision of services aimed at helping people in rural areas. In a direct way, the provision of a rural component in national telecommunication development plans would meet this objective.

More important, perhaps, than the direct benefits of rural telecommunications (eg, in jobs in installation, operation, and maintenance) are the indirect consequences for the distribution of economic benefits. The improved cost-effectiveness of social service delivery programmes, and facilitation of increased or more productive economic activity, as discussed above, would contribute to this goal of reduced inequity.

In addition, the availability of reliable telecommunications linking rural to urban areas may make it easier for people in rural areas to make their needs and wishes known. As a result, rural people may be able to be more effective in claiming their fair share of national budgets. To the extent that government bureaucracies operate on the principle of 'oiling the squeaky wheel', telecommunications infrastructure that permits national governments to better hear the views of rural people may be beneficial to them.

Organisational Requirements for Developmental Benefits from Telecommunications
These hypotheses concerning the external benefits of rural telecommunication investment are not simplistic linear causation hypotheses that predict quick and automatic economic growth to follow from the installation of long distance telephone circuits in rural communities. *Rather, the general hypothesis is that telecommunications infrastructure plus a complementary social infrastructure (eg, rural development programmes or entrepreneurial activity) will together lead to a more economic growth and more effective social services delivery than when either or both of the two basic conditions are absent.*

Development may be seen as an awareness-action process in which access to information is critical to enable people to understand problems, evaluate alternatives, plan and act. Traditionally, the mass media have been considered the main purveyors of information, and little attention has been paid to telecommunications. Development agencies have questioned how access to telephones would help to meet basic development goals.

Cherry (1971) refers to telecommunication services (telephone, telex, telegram) as organisational media (as opposed to the 'informational' mass media). We should not expect that people will spontaneously begin to use the telephone to gather information or to form organisational linkages. However, we can hypothesize that the telephone will be used for organisational and informational purposes within the existing institutional framework of the society.

An institutional framework can exist in any type of society, be it a traditional village with chiefs, elders, or counselors; a commune; or an urban collectivity of families with strong neighbourhood or cultural ties. We need not be pre-occupied with indicators of 'modernisation' but rather of organisation or functional networks.

It can be expected that communication will begin within these networks:

- between members of extended families;
- between tiers of workers in a service organisation such as a health system;
- between field staff and administrative staff in development projects.

As scopes of interest broaden and communities of interest widen, we can expect the telephone system to reinforce new linkages; for example, between leaders within a region, between local representatives and central officials. The degree of organisational structure appears to influence a community's or region's ability to use the media for collective rather than individual purposes.

Planning Considerations

The Need for Integrated Planning
Gellerman (1978) points out that rural telecommunications should be explicity included in integrated rural development programmes. Several other communications planners and researchers have stressed the need for integrating communication planning in national development plans: eg, Okundi (1978), Mgaya (1978), Kourourma (1978), Wellenius (1978), Kaul (1978), Hudson and Parker (1975).

Examples of Investment in Telecommunications Infrastructure in Support of Rural Development
The state of Alaska has purchased 120 small satellite ground stations (with antennas of 4.5 metres in diameter) to provide reliable communications to virtually every permanent community of 25 residents or more. Each village has one dedicated audio channel for health communications, based on

the successful ATS-1 model. A second channel is used for a public toll telephone service, with the possibility of activating additional audio channels backed with local exchanges. The earth stations are operated by RCA Alaska Communications and use the RCA SATCOM satellite. They were purchased by the State of Alaska to meet the communication needs of the region following protracted negotiations with the carrier which claimed that the 'bush' satellite system would not be economically viable. (Walp, 1977).

The Indian Posts and Telegraphs Board has decided to extend telecommunication services to underprivileged areas at the risk of financial loss as part of a national plan to stem rural-urban migration by providing infrastructure that will ease the establishment of cottage industries and the improvement of services. The board has decided to accelerate the installation of public call offices in underprivileged areas from the current 8,730 to 15,000 by 1983. The service will be available to villages of 2,500 or more and to district and sub-district headquarters. (Raman, 1978).

As part of Kenya's 1979-83 Development Plan which has as its theme the 'alleviation of poverty', the Kenya Posts and Telecommunications Organisation is required to provide adequate postal and telecommunications services in every district of the country (Okundi, 1978). Okundi suggests that telecommunications should be considered in national development planning, and that if they are regarded as essential elements in crucial sector plans concerning food, health, education, etc., financing may be obtainable at favourable interest rates. He points out that plans to use media in other sectors – eg, for educational television – is dependent on the availability of telecommunications services for their conveyance, via terrestrial means or satellite.

Tanzania aims as part of its development programme for 1978-81 to provide telephone services to all district administrative centres and to border villages (Mgaya, 1978).

Colombia plans to install public telephones in 2,200 rural communities; Costa Rica will install 56 exchanges and 1,300 public telephones; and Ecuador will construct 128 exchanges and 254 public telephones. These projects are partially funded by loans from the Inter-American Development Bank (Gellerman, 1978).

Bridging the Gap: Integrating Telecommunications Requirements in Development Planning

A major lesson to be drawn from the evidence in this paper is that telecommunication planners and development planners cannot act in isolation. Telecommunication can be a tool to help achieve national economic and social goals. However, for maximum benefit, the telecommunication system must be integrated in national and regional developmental plans. Therefore, telecommunication planning should be included in the plans of other development sectors such as infrastructure (transportation, electrification), social services (health, education, etc.) and agricultural and industrial development. Similarly, funding agencies must not consider telecommunications in isolation, but as one of many strategies for development, and as a key support to other sectors.

As the mass media have become accepted as important development tools, so now telecommunications must also be recognised as a critical component for socio-economic development.

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Note

This paper is based upon a report entitled 'The Role of Telecommunications in Socio-Economic Development: A Review of the Literature With Guidelines for Further Investigation' by Heather E. Hudson, Douglas Goldschmidt, Edwin B. Parker and Andrew Hardy. The report was prepared for the International Telecommunication Union under a special service agreement, No. 9-GLO-001-11-02.

5. The Right to Communicate

The right to communicate was first raised by Jean d'Arcy, President, IIC, in an article in the 'EBU Review', ten years ago. Since then the IIC has supported a number of meetings and papers to refine and consolidate the definition of the right to communicate, and to establish it as a basic human right. In this survey, L.S. Harms, who has been in the vanguard of the discussion for some time, analyses the current state of thinking.

TO ACHIEVE THE RIGHT TO COMMUNICATE

L. S. Harms

Introduction

The title of this paper is taken from the third of the four connected questions posed by Sean MacBride in Paris in December 1977 at the opening session of the UNESCO International Commission for the Study of Communication Problems. Mr. MacBride asked, 'How may the right to communicate, with all its ethical and legal implications, be achieved as a new line of thought and action in the whole of the communication field?' (MacBride, 1978). His three other questions focussed on information flow, a new order, and the media.

From the outset of the dialogue on and study of the right to communicate, the question of how this right might be achieved has been a central one. For instance, in the Telecommission studies in Canada, it was argued that 'If it be accepted that there is a right to communicate, all Canadians are entitled to it.' This line of thought led to policy actions intended to assure that every Canadian had an equitable access to telecommunication services *(Instant World, 1971)*. Recently, this claim has been extended to be universal, to include everyone (IIC, 1975; Martelanc, 1977a; 1977b). More generally, the right to communicate is seen to require that everyone has the communication resources required to satisfy human communication needs (d'Arcy, 1969; UNESCO, 1976).

This paper is intended as a partial answer to the question posed by MacBride. The paper contains three main parts: a working definition; a brief outline of the new communication order; and communication policy problems. The paper concludes with some observations on steps that may be taken toward a fuller achievement of the right to communicate.

Working Definition

The working definition offered below is a tentative and preliminary one. Comment about it and criticism of it is sought. It is intended to move the dialogue and study of this concept a step further.

As is evident, the proposed formulation parallels article 19 of the Universal Declaration of Human Rights. The opening phrase is comprehensive and inclusive. The remaining text lists a number of component rights and suggests a line of action.

> Everyone has the right to communicate; the components of this comprehensive Human Right include but are not limited to the following communication rights:
>
> * a right to assemble, a right to participate, and related *association* rights;
> * a right to inform, a right to be informed, and related *information* rights; and
> * a right to privacy, a right to language, and related cultural *evolution* rights.
>
> Within the world communication order, the achievement of a right to communicate requires that communication resources be available for the satisfaction of human communication needs.

The working formulation above is intended to set forth a comprehensive right to communicate.

This definition conserves the information components of article 19 while incorporating components from other articles in the Universal Declaration of Human Rights, such as a right to assemble and a right to privacy, and it includes new components such as a right to participate (UNESCO, 1976; 1978a) and a right to language (Martelanc, 1977b; Tonklin, 1978). It also permits the introduction of new communication rights such as a right to be selective (Cocca, 1978), a right to co-create information (Jadwiga, 1977), and a right to be entertained (Le Duc, 1977). Thus, the right to communicate differs enough from previous formulations to merit being called a new Human Right (Harms, Richstad and Kie, 1977; Harms and Richstad, 1977; Mitra and Harms, in press).

More specifically, the phrase 'everyone has the right to communicate' extends the earlier 'everyone has the right to freedom of opinion and expression' while retaining the comprehensive and inclusive cultural thrust of the phrase. Continuing dialogue on and study of the right to communicate are

assumed to be necessary. Association rights are included and are set before information rights; information rights are followed by what may be tentively called cultural evolution rights.

The claim that communication must be interactive and participatory has been at the heart of the dialogue and study of the right to communicate. For this reason, certain aspects of article 20 of the Universal Declaration of Human Rights on human association, particularly a right to assemble, have been included in this working definition. Further, the widespread insistence on active participation in the communication process leads to a new communication right: a right to participate. The demand for interactive and participatory communication introduces a number of specific rights that can be organised under the general heading of association rights.

These association rights are of the highest importance for both the small talk of everyday life and for the long-term dialogue necessary to formulate the great ideas – the right to communicate itself provides one convenient example, for it has grown out of multicultural dialogue.

Perhaps at least one half of the world's useful information is neither printed in books nor accessible through the present world information flows because it is stored only in other people's brains (White, 1973). In international discussions this cerebrally stored information tends not to be regarded as information – even though exchange of such cerebrally stored information is a fundamental part of international conferences! The rights of association are critically important to the one-half of the world's adults who are not literate, and to the very many poor persons everywhere who do not have access to needed information from any reliable means through interpersonal communication.

The second area of information rights has, in recent years and for reasons which are well known, received most of the attention. While article 19 boldly claims that everyone has the right to seek, receive, and impart information, the critical examination of information imbalance leads to the observation that in practice – and to a very great extent – article 19 has been a receive-only right. In retrospect, we know that mass media structures are built to work in that way: there are a few sources, there are many receivers. In the new formulation, the rights to inform and to be informed are understood to be active rights.

The information imbalance efforts have been centred on the formal information flows, on news information and to a lesser extent on scientific information. But if a right to inform is to be an active right, not only for professional communicators but for everyone, the structures of the current mass media will have to be transferred or replaced with transceiver and teleconferencing technology.

The third area of cultural evolution rights is historically the newest, the least defined, and the most directly related to problems of cultural imperialism and communication dominance. It includes a right to privacy and expands that right to cover not only individuals but also cultural communities; human groups also have a right to be left alone. A right to language is included, in recognition of the cultural implications of language for small countries and for minorities in large countries. In sum, a culture has a right to evolve in terms of its own values without being swamped by information from the outside or deprived of information needed to nourish and enrich its own cultural traditions. In this special sense, everyone has a right *not* to communicate.

The perceived impact of communication on culture is at the heart of this area. In that value systems evolve within a single cultural setting, most of us encounter difficulties in trying to comprehend the cultural values of other groups, to develop a multicultural view of national or local cultural values. A great deal of patient work remains ahead in this area. Perhaps a bi-level or bicultural solution may be worked out.

The three communication rights areas of association, information and cultural evolution – and the components included in them – have contingent freedoms and responsibilities. Specifically, the exercise of a component communication right requires freedom and imposes responsibility. As the balance between freedom and responsibility is worked out for a communication right in a given context, issues will arise as resources are allocated to meet communication needs. These issues often require policy actions for their resolution.

It should be noted that the term 'human rights' is often expanded to read 'rights' *and* 'freedom', or 'rights' *and* 'responsibilities'. In the conceptual framework above, each right is qualified *both* by contingent freedoms and responsibilities. This approach appears to bypass some of the artificial difficulties that arise when the term 'right' is used in two ways at two different conceptional levels during a discussion; that is, as a 'Human Right', and as a contrasting term for either the term 'freedom' or the term 'responsibility'.

The working definition proposed above illustrates that an emphasis on one right will have an impact

on other rights. For instance, the exercise of a right to participate impacts on a right to privacy. Equally, the exercise of a right to inform – at individual, community, national, and world levels – impacts on the information rights of others, often at a different level and in a distant part of the world. While the necessary studies remain to be done, it now seems reasonably clear that not only individuals but also special interest groups, countries and geographic regions do consider some communication rights more important than others. When these preferences persist over time, we consider them to be cultural values.

New Communication Order

A comprehensive right to communicate must include not only the information that flows through formal networks but also the information that is exchanged, shared, and created through interpersonal communication. Thus, the new order required to achieve a right to communicate is a broad communication rather than professionally oriented information order (Moemeka, 1978).

The scope of the terms communication and information varies considerably from different language and professional perspectives. In this paper, the working definition developed by the MIKS Group in Sweden will be observed.

> To communicate refers to a two-way process, which has emotional as well as cognitive elements and which takes place in non-verbal as well as verbal form. To inform on the other hand refers to a one-way process of predominantly knowledge-oriented verbal communication (Nowak, Rosengren, and Sigurd, 1977:1).

These authors add that 'whereas information is a necessary part of communication, it may also exist independently of any ongoing communication process.' In this sense, information products may be treated as a commodity but the communication process may not.

The prospect of a new communication order invites consideration of other orders, both past and future. A quick look at human communication history suggests that there have been several orders. If we assume that an order is concerned with how communication functions in a society, then each order must embody notions of what communication is, how it works, the resources required for it. A sequence of orders developed more fully elsewhere (Harms and Wedemeyer, in press) begins with the preconversation order and extends on through the conversation, literacy, mass media, new, cosmic and, eventually, postcosmic order. Across human communication history, communication orders come and go. Each of these orders changes irreversibly the communication possibilities of humankind.

This swift tracing of orders suggests that a transition from a mass media order to a new communication order is now under way. Many changes are now becoming evident in the role that communication plays in human society. More detailed models would be needed to provide a scholarly account of the transition, but the essential point would remain: human communications must be fundamentally two-way and participatory.

Throughout the mass media order the core problem or paradigm was:

* Who said what to whom through what channels with what effect?

The emerging communication order asserts a totally different problem or paradigm:

* Humankind has the right to the communication resources required to satisfy human communication needs (UNESCO, 1976; 1978).

In the newer models a horizontal-interactive communication model is located between the concepts of bio-social needs and socio-technical resources. The intention is to suggest the importance of those communication needs associated with interactive and participatory communication. The guiding role assigned to communication policy is also significant.

If a right to communicate is to be achieved within a new communication order, a substantial body of communication policy will have to be formulated and implemented – at world, national and subnational levels (Hadenius and Ringdahl, 1978). Fortunately, there is emerging out of the practices in communication policy what can with some hope be called a communication policy science.

Communication Policy

Three aspects of an emergent communication policy science seem of particular importance to the achievement of the right to communicate. These are: values sensitivity, problem orientation, and multi-methodology.

The values concern of a communication policy science link it to the right to communicate concept. In an interdependent world, these values are multi-cultural; more generally, multi-cultural values are indistinguishable from human rights.

The problem orientation at the moment is most evident in UNESCO's International Commission for the Study of Communication Problems; but other problem-oriented policy activities are to be found, for example, in the United Nations University and the problem-oriented institutes of the East-West Center.

Unfortunately, communication policy science has been multi-method in only a very narrow sense. The methods used for communication policy science have been drawn from First World or Western social science. This matter becomes serious precisely because of many of the current communication problems – such as balanced information flow – have been defined by and appear to be most severe in the non-aligned or Third World.

To build a balance not only in information flow but also in research methodologies, it will be necessary to develop new communication policy research methods from the intellectual traditions of several Third World regions – the Indian, the Chinese, and the Arabic, to mention the old and obvious ones.

In consideration of the achievement of a right to communicate through communication policy, two current projects are of particular interest. The first of these leads from problems in the areas of information rights, and the second from problems in the area of association rights, particularly in an electronic right to assemble.

One consequence of the meetings of the non-aligned countries has been the information of a news agency pool. This pool interlinks national news agencies of several developing countries into a functioning news exchange network. The current Chairman of the Non-Aligned News Agencies Pool has recently stated that 'The right to communicate is what the news pool is all about.' His understanding of the concept is informed by UNESCO's 19C/93 document (UNESCO, 1976), and he draws particular attention to the fact that the right to communicate is expected to evolve and expand and that a new view of the role of communication in society has come about. Thus, a relationship between the news pool and the right to communicate has been made explicit (Mankekar, 1978).

The news pool is a first step of great importance. But it will need to work for the transformation of what are still fundamentally one way structures if it is in the future to accomplish important goals in the area of interactive and participatory communication (Anim, 1978).

The Peacesat Project (Pan-Pacific Education and Communication Experiments by Satellite) has since 1970 provided a continuing demonstration of ways in which the newer communication technologies can serve traditional human communication needs in a way that is consistent with the multi-cultural values of a right to communicate (Bystrom, 1975; 1977). The project utilises the ATS-1 satellite and low-cost ground transceivers, or two-way communication devices. Each of the sixteen participating sites in this international experiment – including Fiji, Papua New Guinea, Tonga and others – can both send and receive, dialogue dominates. The Peacesat Network makes it possible for participants widely separated in the Pacific to assemble electronically, to inform and be informed, and to engage in an exchange which is respectful of each other's cultural values. There are no programmes in the usual 'mass media' sense, even though printed text and graphics can be exchanged; the major content is provided by the communicative interaction among the participants themselves. Medical consultation, seminars, conferences and a wide variety of other demonstrations have been successfully conducted.

One of these demonstrations includes periodic exchanges among news editors across the Pacific (Richstad, 1976). As one participant put it, it is easy to enter and leave a discussion because there is always a local thumb on the switch. Along with the news pool, Peacesat provides an important example of how a right to communicate might be achieved at the international level.

Summary

The above discussion leads to the following observations.

- The achievement of a right to communicate requires a different way of doing things that may be called a new communication order.
- Within this new order, many policy problems encompass right to communicate values, bio-social communication needs, and socio-technical resources.
- Each policy problem links directly to one and sometimes two or more of the component communication rights that are included in a comprehensive right to communicate; such as a right to inform, as in the example of the news pool, or a right to assemble (electronically) as in Peacesat.
- A proposed policy action related to one component communication right should also be examined for its potential impacts on other component rights. Specifically, an over-emphasis on

problems of information flow may distort or suppress the equally important exchange of human 'culture' through interpersonal communication.

From these observations, it follows that a new line of thought and action across the whole of the communication field depends on the selection of an appropriate portfolio of communication problems for the communication field. From this problem-oriented perspective, the right to communicate seems most likely to be achieved through solutions of the various entries in a portfolio of communication policy problems. For this to happen, the best efforts of very many persons over a considerable period of time will be necessary.

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